

## INDEX OF SUBJECTS.

### ABSTRACTS. 1901. Parts I. & II.

(Marked A. i and A. ii respectively); and also to Transactions, 1901 (marked T.); and to Proceedings of the Session 1900—1901; Nos. 227 to 240, Nov., 1900—June, 1901 (marked P.).

#### A.

**Abietes**, formation of resin in several (TSCHIRCH and FABER), A., i, 601.

**Abies alba**, occurrence of maltol in the needles of (FEUERSTEIN), A., ii, 526.

**Absorption** in the intestine (HOBER), A., ii, 610.

in the small and large intestines (REACH), A., ii, 667.

in the liver (BURKER), A., ii, 178.

of fat (PFLUGER), A., ii, 29, 562; (MUNK), A., ii, 176; (ROSENBERG), A., ii, 403.

of artificially coloured fats (HOFBAUER; EXNER; PFLUGER), A., ii, 403.

of maltose (REID), A., ii, 458.

of oxygen by yeast (HARDEN and ROWLAND), T., 1231; P., 1901, 189.

of water (BARCROFT), A., ii, 28.

**Absorptive power** of dilute solutions of salts of the alkali metals for ammonia (DAWSON and McCRAE), T., 493; P., 1901, 5.

of dilute solutions of salts of the alkaline earth metals for ammonia (DAWSON and McCRAE), T., 1069; P., 1901, 177.

**Acetenserine**, a new protamine (KURAEFF), A., ii, 462.

**Accumulators**. See Electrochemistry.

**Acenaphthalene** and **Acenaphthene**, refraction and dispersion of (PELLINI), A., ii, 365.

**Acet.** See also Aceto-, Acetyl-, and under the Parent Substance.

**Acetaldehyde** in green leaves (REINKE and BRAUNMULLER), A., ii, 332.

**Acetaldehyde**, condensation of, with  $\alpha$ -hydroxyisobutaldehyde (ROESLER), A., i, 669.

action of, on *o*-toluidine (EIBNER and PELTZER), A., i, 97.

condensation of, with isovaleraldehyde (WOGGINZ), A., i, 254.

quinol- and resorcinol-carbohydrazones (EINHORN and ESCALES), A., i, 653.

**Acetaldoxime**, action of alkyl iodides on (DUNSTAN and GOULDING), T., 635; P., 1901, 84.

**Acetals** (DELÉPINE), A., i, 3, 669; ii, 6. formation and decomposition of (DELÉPINE), A., i, 254.

and their isomerides, heats of formation of (DELÉPINE), A., i, 314.

action of alcohols on (DELÉPINE), A., i, 365.

**Acetamide**, action of acetic and benzoic chlorides on (TITHERLEY), T., 411; P., 1901, 31.

sodium, action of alkyl iodides, acid chlorides and bromoamides on (TITHERLEY), T., 392; P., 1901, 29.

sodium bromide and iodide (TITHERLEY), T., 413; P., 1901, 31.

**Acetamide**, cyano-, condensation of, with chloroform, and action of, on ethyl ethoxymethyleneacetoacetate (ERRERA), A., i, 43.

**Acetamides**, alkyl substituted, and their hydrochlorides and sodium derivatives, preparation of (TITHERLEY), T., 400; P., 1901, 30.

**Acetanilide**, alkylation of (LANDER), T., 691; P., 1901, 60.

chlorination of (CHATTAWAY and ORTON), T., 469; P., 1901, 39.

- Acetanilide**, colour reaction of, with potassium permanganate (MAAS), A., ii, 210.  
detection of, in urine (PETERMANN), A., ii, 485.
- Acetanilide**, 2:5- and 4:3-chlorobromo- (CHATTAWAY and ORTON), T., 466; P., 1901, 39.  
chloro*di*bromo- and *dichloro*bromo-derivatives of (HURTLEY), T., 1295; P., 1901, 192.  
isomeric chlorobromo-derivatives of (CHATTAWAY and ORTON), T., 816; P., 1901, 124.  
*o*-chloro-*p*-nitro-, and *p*-chloro-*o*- and -*m*-nitro- (CHATTAWAY, ORTON, and EVANS), A., i, 24.  
*o*-, *m*-, and *p*-nitro-, substituted nitrogen bromides and chlorides from (CHATTAWAY, ORTON, and EVANS), A., i, 23.
- Acetanilides**, chloro-, action of potassium hydrosulphide, cyanide and thiocyanate on (GROTJE), A., i, 79.  
action of potassium thiocyanate on (FRIEDRICH and BECKURTS), A., i, 80.
- Acetic acid** hydrobromide perbromide (v. BAFFER and VILLIGER), A., i, 659.  
detection of, in urine (LIPLIAWSKY), A., ii, 428.  
estimation of (DELFINO and MIRANDA), A., ii, 45.
- Acetic acid**, manganic salt (CHRISTENSEN), A., ii, 512.
- Acetic acid**,  $\beta$ -acetyl ethyl and propionyl-methyl esters (VAN REYMENT), A., i, 126.  
benzoyl-*o*- and -*m*-tolyl esters (BARTOLOTTI), A., i, 37.  
 $\beta\beta$ -trichloro- $\alpha$ -bromo- and - $\alpha$ -iodo-ethyl esters (GABUTTI and BARGELINI), A., i, 366.  
ethyl ester, influence of non-electrolytes on the rate of hydrolysis of (KULLGREN), A., ii, 496.  
compound of, with triphenylmethyl (GOMBERG), A., i, 638.  
iodoethyl ester (HENRY), A., i, 577.  
2:4:6-triiodophenol ester (BRENANS), A., i, 643.  
methyl ester, rate of hydrolysis of (COPPADORO), A., ii, 544; (HENRI and BANCELS), A., ii, 647.
- Acetic acid**, amino-. See Glycine.  
bromo-, ethyl ester, action of, on silver nitrite (SCHOLL and SCHÖFER), A., i, 359.  
chloro-, action of, on *p*-toluidine (STAPPES), A., i, 139.
- Acetic acid**, trichloro-, molecular volume of, in organic solvents (CARRARA and LEVI), A., ii, 4.  
cyano-, synthesis of caffeine, theobromine, theophylline, uric acid, and xanthine from (TRAUBE), A., i, 54.  
phenylhydrazone, and the action of sodium and hydroxylamine on the ethyl ester (BERTINI), A., i, 775.  
ethyl ester, condensation of, with acetone (KOMPPA), A., i, 114.  
condensation of, with aldehydes (BERTINI), A., i, 537.  
action of, on ketones (GUARESCHI), A., i, 341; (PEANO), A., i, 346.  
action of halogens on the sodium derivative of (ERRERA and PERCIABOSCO), A., i, 18.  
action of halogens and carbon disulphide on the sodium derivative of (WENZEL), A., i, 402.  
esters, action of formic esters on (DE BOLLEMONT), A., i, 116, 117.  
haloids, esters, action of, on tertiary bases (WEDEKIND), A., i, 639.  
nitro-, ethyl ester (BOUVEAULT and WAHL), A., i, 5; (WAHL), A., i, 445.  
thio-, additive reactions of (EIBNER), A., i, 321.  
action of alkyl thiocyanates and alkylthiocarbimides on (WHEELER and MERRIAM), A., i, 514.  
thiocyano-, phenyl ester (WHEELER and JOHNSON), A., i, 706.
- Acetic butyric anhydride** (AUTENRIETH), A., i, 186.
- Acetic chloride**, compound of, with aluminium chloride, and its interaction with benzene (BOESEKEN), A., i, 474.
- Acetic thiocyanate**, action of, on ethyl phenyl-thiol-, and -thion-carbazinate (WHEELER and DUSTIN), A., i, 25.
- Aceto-**. See also under Parent Substance.
- Acetoacetic acid**, ethyl ester, mechanism of the formation of (REFORMATSKY), A., i, 447.  
product of nitration of (BOUVEAULT and BONGERT), A., i, 579.  
fluorylhydrazone (DIELS), A., i, 522.  
sodium derivative, syntheses with (MICHAEL), A., i, 123.  
methyl and ethyl esters, transformation of *O*-acyl derivatives of, into the isomeric *C*-acyl derivatives (CLAISEN and HAASE), A., i, 118; (WISLICENUS and KÖRBER), A., i, 187.

- Acetoacetic acid**, methyl ester, sodium derivative, action of butyryl chloride on (BOUVEAULT and BONGERT), A., i, 311.
- Acetoaceticglycine**, diethyl ester (FISCHER), A., i, 192.
- 4-Acetoacetylpyridine** and its anilide, mono-oxime and platinumchloride (TSCHERNE), A., i, 749.
- Acetol**. See Acetylcarbinol.
- Acetone**, equilibrium between water, phenol and (SCHREINEMAKERS), A., ii, 445.  
solidification of (FORMENTI), A., i, 13.  
condensation of, with carbamide (WEINSCHENK), A., i, 583.  
condensation of, with ethyl cyanoacetate (KOMPPA), A., i, 114.  
action of hypophosphorous acid on (MARIE), A., i, 635.  
formation of, from albumin, and detection of (BLUMENTHAL and NEUBERG), A., i, 433.  
influence of diet on the separation of (SCHUMANN-LECLERCQ), A., ii, 463.  
new reaction of (STERNBERG), A., ii, 587.  
estimation of, gasometrically, in urine (RIEGLER), A., ii, 361.
- Acetonebutyrylhydrazone** (BONGERT), A., i, 410.
- Acetonedicarboxylic acid**, ethyl ester, action of, on aniline (BESTHORN and GARBEN), A., i, 78.  
action of, on *m*-phenylenediamine (BESTHORN and GARBEN), A., i, 97.  
compounds of, with diazo-compounds, and their decomposition products (BÜLOW and HÖPFNER), A., i, 239.  
and mono- and di-anilides (BESTHORN and GARBEN), A., i, 78.
- Acetonedicarboxylic acid**, cyano-, ethyl ester, properties of alkyl derivatives of, and the methyl ester (DERÖME), A., i, 313.
- Aceto- $\alpha$ - and - $\beta$ -naphthalides**, alkylation of (LANDER), T., 697; P., 1901, 59.
- Acetonitrile** as a catalytic reagent (MICHAEL), A., i, 457.
- Acetonylacetone**, physical constants of, and action of mineral acids and alkalis on (GRAY), T., 681; P., 1901, 89.  
condensation of, with hydrazine hydrate (GRAY), T., 682; P., 1901, 90.
- Acetonylisocamphor** and its disemicarbazone, phenylhydrazones, and imide (DUDEN and HEYNSIUS), A., i, 748.
- Acetonylpropylidenebistetronic acid**, and its benzoyl derivative and oxime, (WOLFF and GABLER), A., i, 285.
- Acetophenone** catechol-, resorcinol-, and quinol-carbohydrazones (EINHORN and ESCALES), A., i, 652.  
selenium derivatives of (KUNCHELL and ZIMMERMANN), A., i, 214.
- Acetophenone**, *o*-amino-, compound of, with ethyl oxalate (CAMPS), A., i, 751.  
bromo-, action of, on sodioacetylacetone (MARCH), A., i, 596.  
bromo- and chloro-, iodine derivatives of (COLLET), A., i, 35.  
*m*-cyano- (RUPE and V. MAJEWSKI), A., i, 104.
- Acetophenoneaminophenylguanidine** nitrate and picrate (PELLIZZARI and RICKARDS), A., i, 770.
- Acetophenonedisulphone**. See Diethyl-disulphone- $\alpha$ -phenylethane.
- Acetophenoneoxime**, action of alkyl iodides on (DUNSTAN and GOULDING), T., 637; P., 1901, 84.
- Acetophenoneoximes**,  $\omega$ -chloro- and  $\omega$ -bromo-derivatives, and *m*-nitro- of the bromo-compound, and their acetyl derivatives (KORTEN and SCHOLL), A., i, 549.
- Acetophenone-*o*- $\beta$ -, -*m*-, and -*p*-phenylbenzimidazole hydrazones** (MIKLASZEWSKI and V. NIEMENTOWSKI), A., i, 762.
- Acetophenonepinacolone** from alcohol and acetophenone (CIAMICIAN and SILBER), A., i, 36.
- Aceto-*o*- and -*p*-toluidides**, alkylation of (LANDER), T., 693; P., 1901, 59.
- Acetoxime**, action of alkyl iodides on, in presence of sodium methoxide (DUNSTAN and GOULDING), T., 630; P., 1901, 84.
- o*-Acetoxybenzoic acid**. See Aspirin.
- 1-Acetoxy-2-benzoylcamphene** (FORSTER), T., 1002.
- Acetoxyethylideneacetone** (PAULY and V. BERG), A., i, 506.
- Acetoxymethylfurfural** (FENTON and GOSTLING), T., 810; P., 1901, 119.
- $\alpha$ -Acetoxy- $\alpha$ -propoxy- $\beta\beta$ -trichloroethane** (GABUTTI), A., i, 367.
- p*-Acetoxytriphenylacetyl acetate** (BISTRZYCKI and NOWAKOWSKI), A., i, 717.
- Acetyl-**. See also under Parent Substance.
- p*-Acetylacetanilide**, selenium derivative of (KUNCHELL and ZIMMERMANN), A., i, 215.
- Acetylacetone**, action of hydrogen sulphide on (LETEUR), A., i, 581.

- Acetylacetone** sodium derivative, action of, on bromoacetophenone (MARCH), A., i, 596.  
 platinum compounds of, and their potassium and sodium salts (WERNER), A., i, 682.
- Acetylacetoneglycine**, ethyl ester (FISCHER), A., i, 192.
- Acetylamidrazone** and its benzylidene and methylene derivatives (BAMBERGER and GROB), A., i, 292.
- 5-*p*-Acetylaminooanilino-7-methylnaphthaphenazonium-3-sulphonic acid**, 9-chloro- (KEHRMANN and MÜLLER), A., i, 420.
- m*-Acetylaminobenzenesulphonic acid**, salts (GNEHM and SCHEUTZ), A., i, 519.
- o*-Acetylaminobenzoic acid**, ethyl ester (MEHNER), A., i, 645.  
 4- and 6-chloro- (COHN), A., i, 637.
- Acetylaminobenzyl chlorides** (KÜHN), A., i, 42.
- Acetylaminobenzylpiperidines**, *o*-, *m*-, and *p*- (KÜHN), A., i, 42.
- 7 (or 4)-Acetyl-amino-2:4 (or -2:7)-dimethylbenzimidazole** (PINNOW), A., i, 412.
- 4-Acetyl-amino-1:3-dimethylbenzimidazolone-5-carboxylic acid** (PINNOW), A., i, 413.
- m*-Acetylaminodimethyl-*p*-toluidine**, *o*-nitro-, and its methiodide (PINNOW), A., i, 412.
- 4'-Acetylaminodiphenylamine**, 3-chloro-6-nitro- (KEHRMANN and KRAZLER), A., i, 420.
- Acetylaminooethoxyacetophenone** and nitro- (KUNCKELL), A., i, 214.
- Acetylaminohydroxyacetophenone** and its oxime, phenylhydrazone, and nitro- and  $\omega$ -chloro-derivatives (KUNCKELL), A., i, 213.
- 3-Acetylaminoo-5-methoxy-7-phenylnaphthaphenazonium methyl sulphate** (KEHRMANN and SILBERSTEIN), A., i, 103.
- 5-Acetyl-amino-1:2-naphthaquinone** and -2-naphthol and its 1-amido- and nitroso-derivatives (KEHRMANN and DENK), A., i, 89.
- 2-Acetylaminophenol**, 4:6-*d*-nitro- (MELDOLA and WECHSLER), P., 1900, 180.
- 5-Acetylaminophenonaphthoxazone** and 2-nitro- (KEHRMANN and BARCHE), A., i, 47.
- o*-Acetylaminophenylhydroxy-quinoxaline** and -methylquinoxaline (MARCHELEWSKI and BURACZEWSKI), A., i, 347.
- 5-Acetylaminophenyl-naphthaphenazonium salts**, 6-chloro- (KEHRMANN and BARCHE), A., i, 48.
- Acetyl-*o*-aminophenylpropionic acid**, ethyl ester (CAMPS), A., i, 751.
- 5-Acetylaminophenylrosinduline salts** and an iminazole derivative (KEHRMANN and BARCHE), A., i, 48.
- $\alpha$ -Acetylaminopropionic acid** and its ethyl esters, amide, ammonium salt, hydrochloride and nitrate (DE JONGE), A., i, 130.
- 3-Acetylaminorosinduline salts** (KEHRMANN and SILBERSTEIN), A., i, 103.
- o*-Acetyl-amino-*p*-tolyl-dimethylethylammonium bromide** and ***m*-Acetyl-amino-*p*-tolyl-trimethylammonium iodide** (PINNOW), A., i, 413.
- 4-Acetyl-amino-1:2:5-trimethylbenzimidazole** and its methiodide (PINNOW), A., i, 139, 412.
- Acetylation** of arylamines (SUDBOROUGH), T., 533; P., 1901, 45.
- Acetylbenzamide**, *p*-nitro- (RAPPEPORT), A., i, 569.
- m*-Acetylbenzoic acid** and its methyl ester (RUPE and V. MAJEWSKI), A., i, 104.
- Acetylbenzoylhydrazoxime**, acetyl derivative, and **Acetylbenzoyl-*p*-bromophenylhydrazoxime** (PONZIO and ROSSI), A., i, 169.
- Acetylbromal bromide and chloride** ( $\alpha$ BBB-tetrabromo- and  $\alpha$ -chloro-BBB-tribromo-ethyl acetate) (GABUTTI), A., i, 11.
- Acetylbromoamino-*o*-mono- and -2:6-dibromo-*p*-nitrobenzene** (CHATTAWAY, ORTON, and EVANS), A., i, 24.
- Acetylbromoaminochlorobenzenes** (CHATTAWAY and ORTON), T., 819; P., 1901, 124.
- Acetyl-bromo- and -chloro-amino-2:4-dichlorobenzenes**, action of, on amines and phenylhydrazine (CHATTAWAY and ORTON), T., 461; P., 1901, 38.
- Acetyl-bromo- and -chloro-aminochlorobromobenzenes** (CHATTAWAY and ORTON), T., 816; P., 1901, 124.
- Acetyl-bromo- and -chloro-amino-*o*-, -*m*-, and -*p*-nitrobenzenes** (CHATTAWAY, ORTON, and EVANS), A., i, 23.
- Acetylcarbinol (acetol)** (KLING), A., i, 625.
- 4-Acetylcatechol** and its phenylhydrazone, semicarbazone, and 4-dichloro-derivative (BRUHNS), A., i, 215.
- Acetylchloral bromide and iodide** (GABUTTI and BARGELLINI), A., i, 366.
- Acetylchloroaminobenzene**, preparation of (CHATTAWAY and ORTON), T., 277; P., 1900, 231.
- Acetylchloroaminobromobenzenes** (CHATTAWAY and ORTON), T., 820; P., 1901, 124.



- Acetylchloroamino-2:4-dichlorobenzene**, preparation of (CHATTAWAY and ORTON), T., 280 ; P., 1900, 231.
- Acetylchloroamino-*o*-mono- and -2:6-dichloro-*p*-nitrobenzene** (CHATTAWAY, ORTON, and EVANS), A., i, 24.
- Acetylchloro-dextrose and -lactose** (SKRAUP and KREMANN), A., i, 506.
- Acetylchlorogalactose** (FISCHER and ARMSTRONG), A., i, 189 ; (SKRAUP and KREMANN), A., i, 506.  
preparation of (RYAN and MILLS), T., 704 ; P., 1901, 90.
- Acetylchlorohydrose** and its reduction and hydrolysis (V. ARLT), A., i, 369.
- Acetylcoumaroneoxime** (STOERMER), A., i, 336.
- $\alpha$ -Acetyl- $\beta$ -dimethyladipic acid**, hydrogen ethyl ester and semicarbazone (TIEMANN and TIGGES), A., i, 158.
- Acetyldioxyquinoxaline** and its salts (MANUELLI and GALLONI), A., i, 413.
- Acetyldiphenyl**, selenium derivative of (KUNCKELL and ZIMMERMANN), A., i, 215.
- Acetyldiphenylthiocarbamide**, action of bromine on, in chloroform solution, and its oxide (HUGERSHOFF and KONIG), A., i, 758.
- Acetylene**, production of (BONE and JERDAN), T., 1042 ; P., 1901, 162.  
electrochemical behaviour of (COHEN), A., ii, 539.  
decomposition of, at high temperatures (BONE and JERDAN), P., 1901, 165.  
comparison of the solubility of ethylene and (TUCKER and MOODY), A., ii, 696.  
action of, on cuprous chloride dissolved in potassium chloride (CHAVAS-TELON), A., i, 494.  
action of nitric acid on (TESRONI and MASCARELLI), A., i, 494.  
analysis of (ROSSEL and LANDRISET), A., ii, 202.  
estimation of phosphorus and sulphur in (EITNER and KEPPELER), A., ii, 689.
- Acetylene**, iodo-, so-called, constitution of (PERATONER and SPALLINO), A., ii, 657.
- Acetylenedicarboxylic acid**, action of bromine on (LOSSEN and TREIBICH), A., i, 632.
- Acetylenetriphenyltriamine** (SABANÉEFF and PROSIN), A., i, 695.
- Acetylenoid metallic radicles** (BERTHELOT), A., i, 494.
- 3-Acetyl-7-ethoxy-2 methylechromone** (v. KOSTANECKI and RÓŻYCKI), A., i, 223.
- 2-Acetylfurfuran** from wood-tar and its synthesis, and oxime and benzoyl derivative and semicarbazone (BOUVEAULT), A., i, 400.
- $\beta$ -Acetylglutaric acid** and its ketodilactone (FIRFIG and ROHM), A., i, 121.
- $\alpha$ -Acetylheptinene** (*acetylenanthylidene*) and the action of sulphuric acid on (MOUREU and DELANGE), A., i, 14.  
decomposition of, by alkalis (MOUREU and DELANGE), A., i, 14.
- Acetylhexoxymethane** (MOUREU and DELANGE), A., i, 14.
- Acetylmino- $\alpha$ -thiocarbonic acid**, esters (WHEELER and JOHNSON), A., i, 705.
- Acetylmalono-anilic and -thionilic acids**, ethyl esters (BEHREND, MEYER, and BUCHHOLZ), A., i, 136.
- Acetylmesitylene**, dichloro-, and its bromo-derivatives (KUNCKELL and HILDEBRANDT), A., i, 552.
- 4-Acetylmethylamino-1-acetyl-7-methylbenzotriazole** (PINNOW), A., i, 139.
- Acetylmethylanilide**,  $\alpha$ -chloro- and  $\alpha$ -bromo- (BISCHOFF), A., i, 526.  
4-chloro- (CHATTAWAY and ORTON), T., 465 ; P., 1901, 39.
- Acetylmethylcarbamide**, cyano- (TRAUBE), A., i, 54, 762.
- Acetylmethylcarbinol**, production of, by *Bacillus tartricus* (GRIMBERT), A., ii, 328.
- Acetylmethylenechlorohydrin** (DESCUDÉ), A., i, 504.
- Acetylmethylcyclohexanone**, constitution of, and of the acid,  $C_9H_{16}O_3$ , from it (LESER), A., i, 278.
- 2:3-Acetylmethylquinoxaline** (SACHS and BARSCHALL), A., i, 670.
- Acetyl- $\alpha$ - and - $\beta$ -naphthyl-thio- and -isothio-carbamides** (HUGERSHOFF and KONIG), A., i, 27.
- Acetyl-*m*-nitrobenzylanilide** (PURGOTTI and MONTI), A., i, 22.
- Acetylenanthylidene**. See Acetylheptinene.
- Acetylphenyl- $\alpha$ -amino-trichloroethyl hydrosulphide** (EIBNER), A., i, 321.
- Acetyl-*o*-phenylenediamine** (MANUELLI and GALLONI), A., i, 413.
- Acetylphenylethylideneoxy-cyclotriazane** (VOSWINCKEL), A., i, 54.
- Acetylphenylglycine-*o*-carboxylic acid**, dimethyl and diethyl esters (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 709.  
esters (VORLANDER and MEUSEL), A., i, 83.

- Acetylphenyl-thio- and -isothio-carbamide**, action of aqueous sodium hydroxide on (HUGERSHOFF and KÖNIG), A., i, 27.
- Acetylpipecrone**, synthesis of (FEUERSTEIN and HEIMANN), A., i, 465.
- $\alpha$ -Acetylpropionic acid**, and its  $\alpha$ -bromo- and  $\alpha$ -chloro-derivatives and their nitriles (VAN REYEMANT), A., i, 126.
- 4-Acetylpyrogallol** and its disulphonic acid, phenylhydrazine, and 4-dichloro-derivative (BRUHNS), A., i, 215.
- Acetyldithiocarbamic acid**, esters (WHEELER and MERRIAM), A., i, 514; (WHEELER and JOHNSON), A., i, 705.
- Acetylthioncarbanilic acid**, methyl ester (WHEELER and DUSTIN), A., i, 25.
- Acetyl-o-toluidide**, 6-chloro- (COHN), A., i, 637.
- Acetyl-o- and -p-tolylthiocarbamides**, action of aqueous sodium hydroxide on (HUGERSHOFF and KÖNIG), A., i, 27.
- $\beta$ -Acetyltrimethylglutaric acid** and its salts and ketodilactone (FITZIG and SALOMON), A., i, 123.
- Acetyltrimethyl-isoalloxanthin** (DUNSTAN and HENRY), A., i, 647.
- Acetyltropic acid** (HESSE), A., i, 713.
- $\alpha$ -Acetyl- $\gamma$ -valerolactone**,  $\delta$ -chloro- (TRAUBE and LEHMANN), A., i, 502.
- Acid**,  $C_3H_9O_3P$ ,  $C_3H_9O_4P$ , and  $C_6H_{15}O_4P$ , from the action of hypophosphorous acid on acetone (MARIE), A., i, 635.
- $C_4H_3O_3N$ , from the action of nitric acid on acetylene (TESTONI and MASCARELLI), A., i, 494.
- $C_5H_7O_3N_3$ , and its dimethylamine salt, from the product of nitration of ethyl acetoacetate (BOUVEAULT and BONGERT), A., i, 579.
- $C_6H_{11}O_5N$ , obtained in the preparation of  $\alpha$ -acetylaminopropionic acid (DE JONG), A., i, 131.
- $C_7H_9O_3N$ , and its salts, from the oxazole,  $C_9H_{13}O_3N$  (MARCH), A., i, 312.
- $C_7H_{11}O_3N_3$ , and its diethylamine salt, from the product of nitration of ethyl acetoacetate (BOUVEAULT and BONGERT), A., i, 579.
- $C_7H_{12}O_4$ , from the oxidation of phellandrene nitrite (WALLACH and H. and E. LAUFFER), A., i, 89.
- $C_7H_{14}O_2$ (?), from beeswax (GRESHOFF and SACK), A., i, 446.
- $C_7H_{14}O_3$ , from the condensation of isovaleraldehyde and acetaldehyde (WOGGINZ), A., i, 254.
- $C_8H_8O_4$ , from *Coriaria angustissima* (EASTERFIELD and ASTON), T., 123; P., 1900, 211.
- Acid**,  $C_8H_{11}O_3N_3$ , and its pyridine salt and urethane, from the product of nitration of ethyl acetoacetate (BOUVEAULT and BONGERT), A., i, 579.
- $C_8H_{12}O_4$ , from ethyl crotonate and sodium (MICHAEL), A., i, 125.
- $C_8H_{14}O_3$ , from the oxyketone,  $C_9H_{16}O_2$ , from *z*-terpineol (SCHIMMEL & Co.), A., i, 395.
- $C_9H_{10}O_4$ , and  $C_9H_{12}O_4$ , from the reduction of dihydroxyapocamphoric acid (KOMPPA), A., i, 668.
- $C_9H_{14}O_4$ , m. p. 192°, from the oxidation of  $\alpha$ -campholytic acid (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 6.
- $C_9H_{14}O_4$ , and  $C_9H_{14}O_5$ , from the oxidation of tetrahydroxylic acids (PERKIN and YATES), T., 1389.
- $C_9H_{16}O_3$ , from acetylmethylcyclohexanone (LESER), A., i, 278.
- $C_9H_{16}O_3$ , from the hydrolysis of campholytolactone (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 5.
- $C_{10}H_8O_4$ , and its salts and ethyl esters, from *o*-carboxycinnamic acid (LEUPOLD), A., i, 711.
- $C_{10}H_{12}O_2$ , from the hydrolysis in the organism of an oil from the acid,  $C_{10}H_{14}O_4$  (HILDEBRANDT), A., ii, 670.
- $C_{10}H_{12}O_4$ , and its tetrabromide, from the hydrolysis of ethyl  $\beta$ -diamylsulphone- $\alpha$ -methylbutyrate (POSNER and CLAUDIUS), A., i, 704.
- $C_{10}H_{14}O_4$ , from the hydrolysis of citral or geraniol in the organism (HILDEBRANDT), A., ii, 181, 669.
- $C_{10}H_{15}O_5N$ , from the action of nitric anhydride on camphene (DEMJANOFF), A., i, 554.
- $C_{10}H_{17}O_5N_3$ , and  $C_{11}H_{19}O_5N_3$ , from antipeptone (SIEGFRIED), A., i, 58.
- $C_{10}H_{18}O_3N_2$ , two, from the action of alkali hypobromite on  $\alpha$ - and  $\beta$ -camphornitrilamides (TIEMANN and TIGGES), A., i, 20.
- $C_{11}H_{10}O_5$ , from the oxidation of mesityl-glyoxylic acid (VAN SCHERPENZEEL), A., i, 328.
- $C_{11}H_{17}O_2$ , ethyl ester, from the action of potassium hydrogen sulphate on ethyl methylcyclohexanolisobutyrate (v. BRAUN), A., i, 157.
- $C_{11}H_{18}O_4$ , from the oxidation of carbofenchone (WALLACH and v. WESTPHALEN), A., i, 332.
- $C_{11}H_{18}O_4$ , from the oxidation of cascarillic acid (FENDLER), A., i, 219.
- $C_{12}H_{12}O_6$ , from isoirone (HAARMANN & REIMER), A., i, 727.

- Acid**,  $C_{12}H_{14}O_5N_2$ ,  $2H_2O$ , from  $\alpha$ -keto-valerolactone- $\gamma$ -carboxylic acid, phenylhydrazine, and sodium hydroxide (WOLFF and HEROLD), A., i, 503.
- $C_{12}H_{24}O_2$ , and  $C_{44}H_{88}O$ , from the distillation of the wax from the wild fig tree (GRESHOFF and SACK), A., i, 446.
- $C_{13}H_{22}O_4$ , from the distillation of castor oil (THOMS and FENDLER), A., i, 252.
- $C_{14}H_{16}O_6$ , from tetrone acid and mesityl oxide (WOLFF and GABLER), A., i, 285.
- $C_{14}H_{18}O_5$ , from the action of potassium hydroxide on  $C_{16}H_{19}O_4$  (DIECKMANN), A., i, 542.
- $C_{15}H_{20}O_3$ , from  $\alpha$ -lupulinic acid, potassium hydroxide solution, and sulphuric acid (BARTH), A., i, 41.
- $C_{18}H_{30}O_5$ , from lichens (HESSE), A., i, 87.
- $C_{20}H_{20}O_5$ , from the oxidation of polymeric phenylisocrotonic acid (FITTIG), A., i, 145.
- $C_{18}H_{34}O_3$ , and  $C_{18}H_{34}O_5$ , from the action of fused potash on dihydroxystearic acid, and the diamide, amic acid, and acetyl anhydride, salts and ethyl ester of the latter acid (LE SUEUR), T., 1314: P., 1900, 91.
- $C_{21}H_{34}O_9N_6$ , and  $C_{21}H_{36}O_{10}N_6$ , from the digestion of fibrin or Witte's peptone with pepsin (SIEGFRIED), A., i, 176.
- $C_{24}H_{48}O_2$ , and  $C_{27}H_{54}O_2$ , from the wax,  $C_{27}H_{54}O_2$  (GRESHOFF and SACK), A., i, 445.
- $C_{27}H_{20}O_6$ , from the condensation of benzaldehyde with pyruvic acid (ERLENMEYER), A., i, 390.
- $C_{27}H_{54}O_2$ , from the oil of sweet orange-peel (STEPHEN), A., i, 160.
- standard, preparation of an exact (HIGGINS), A., ii, 190.
- Acid amides**, hydrolysis of (REID), A., i, 29.
- Acid anhydrides**. See Anhydrides.
- Acid carbonates**, detection of, in waters (POZZI-ESCOT), A., ii, 346.
- Acid chlorides**, action of, on aldehydes in presence of zinc chloride (DESCUDÉ), A., i, 504, 644.
- action of, on tertiary amines (WEDEKIND), A., i, 639.
- action of, on ethers in presence of zinc (DESCUDÉ), A., i, 357; (FREUNDLER), A., i, 445; (WEDEKIND and HAEUSERMANN), A., i, 536.
- action of, on paraformaldehyde (HENRY), A., i, 581.
- Acid chlorides**, organic, method of preparing (MEYER), A., i, 628.
- Acid cyanides**, preparation of phenylimides of (SACHS), A., i, 272.
- Acidimetry** of aldehydes and ketones (ASTRUC and MURCO), A., i, 66.
- of arsenic acid (ASTRUC and TARBOUTIECH), A., ii, 552.
- of phenol, determination of the, by the thermochemical method (PLOTNIKOFF), A., ii, 229.
- of phosphoric acid (BERTHELOT), A., ii, 502, 504, 551; (CAVALIER), A., ii, 502.
- of *p*-sulphanilic acid (MASSOL), A., i, 532.
- Acids**, soluble in dilute alcohol, from gum tragacanth (O'SULLIVAN), T., 1176; P., 1901, 156.
- from lichens (HESSE), A., i, 85, 149, 595; (ZOPF), A., i, 88, 546; (SALKOWSKI), A., i, 152.
- soluble in ether, in molasses residues (HERZFELD), A., ii, 681.
- formation of, in plants (BERTHELOT), A., ii, 677.
- distribution of, in flowers, leaves, and stems (ASTRUC), A., ii, 677.
- synthesis of, by means of organo-magnesium compounds (GRIGNARD), A., i, 679.
- constitutional formulæ of (VORLANDER), A., i, 444.
- method of determining the relative affinities of (FENTON and JONES), T., 92; P., 1900, 205; 1901, 24.
- equilibrium between alcohol, esters, water, and (EULER), A., ii, 307.
- action of, on salts of the amines (COLSON), A., ii, 496.
- separation and identification of (ABEGG and HERZ), A., ii, 190.
- Acids, aromatic**, tertiary, synthesis of (BISCHRYZICKI and WEHRBEIN), A., i, 712.
- unsaturated, synthesis and products of dehydration of (BAKUNIN), A., i, 710.
- derivatives of (LEUPOLD), A., i, 711.
- Acids of complex function**, titration of (BERTHELOT), A., ii, 497.
- Acids, fatty**, solidification point of (MORESCHINI), A., ii, 48.
- dry distillation of salts of (DILTHEY), A., i, 498.
- benzoylation of, in presence of ammonia (ORON), T., 1351; P., 1901, 200.
- estimation of, in soaps (BAUD), A., ii, 358.
- saturated, action of zinc powder on (HÉBERT), A., i, 251.

**Acids, fatty**, higher unsaturated, oxidation of, with sulphuric acid and ammonium persulphate (ALBITZKY), A., i, 5.

**Acids, inorganic**, neutralisation of (MIOLATI and MASSETTI), A., ii, 381.

**Acids, non-carboxylic organic**, energy of (COFFETTI), A., i, 29.

**Acids, volatile**, estimation of, in wines (KLEIBER), A., ii, 629.

**Acids**. See also Aldehyde-acids, Amino-acids, Hydroxy-acids, and Ketonic acids.

**Acids** (or their salts or derivatives). See also :—

Acetic acid.

Acetic acid, thio- and thiocyno-.

Acetoacetic acid.

Acetoaceticglycine.

Acetonedicarboxylic acid.

Acetonylpropyldenebistetric acid.

*o*-Acetoxybenzoic acid (*aspirin*).

Acetylacetoneglycine.

5-*p*-Acetylaminonilino-7-methylnaphthaphenazonium-3-sulphonic acid.

*m*-Acetylaminobenzenesulphonic acid.

2-Acetylaminobenzoic acid.

4-Acetyl-amino-1:3-dimethylbenziminazolon-5-carboxylic acid.

Acetyl-*o*-aminophenylpropionic acid.

$\alpha$ -Acetylaminopropionic acid.

*m*-Acetylbenzoic acid.

$\alpha$ -Acetyl- $\beta\beta$ -dimethyladipic acid.

Acetylenedicarboxylic acid.

$\beta$ -Acetylglutaric acid.

Acetylminodithiocarbonic acid.

Acetylmalono-anilic and -thionilic acids.

Acetylphenylglycine-*o*-carboxylic acids.

$\alpha$ -Acetylpropionic acid.

4-Acetylpyrogalloldisulphonic acid.

Acetyl*l*dithiocarbamic acids.

$\beta$ -Acetyltrimethylglutaric acid.

Acetyltropic acid.

Acolic acid.

Acrylic acids.

Adipic acid.

Æscoroeinsulphonic acid.

Æsculetincarboxylic acids.

Alanine.

*iso*Alantolic acid.

*p*-Aldehydocinnamic acid.

Alectoric acid.

Alkylcarbamic acids.

Alkylcyanoacetic acids.

Alkylsulphonacetic acids.

Allophanic acid.

*iso*Amylanthranilic acid.

$\beta$ -Amylbutyric acid.

**Acids**. See :—

Amyliscrotonic acid.

$\beta$ -Amyl- $\alpha$ -mono- and -di-ethylbutyric acids, *dithio*-.

$\beta$ -Amyl- $\alpha$ -mono- and -di-methylbutyric acids, *dithio*-.

Amyl-3-nitrophthalic acids.

$\beta$ -Amyloxypropionic acid.

Amylpropionic acid ( $\alpha$ -*octinoic acid*).

$\beta$ -Amylsulphone- $\alpha$ -ethyliscrotonic acid.

$\gamma$ -Amylvaleric acid.

Angelic acid (*pentenoic acid*).

Anhydrodimethyltetramethylenetricarboxylic acid.

Anhydro-*p*-nitrobenzeneazoacetonedicarboxylic acid.

Anhydrotetric acid.

Anilodiacetic-*o*-carboxylic acid.

Anilic acids.

Anilineaminosulphonic acid.

Anilinesulphonic acids.

Anilinthiosulphonic acids.

$\beta$ -Anilinoacrylic acid.

Anilindiacetic acid.

$\delta$ -Anilino-glutaconic acid.

Anilino-oxalyldimethylacetoacetic acid.

Anilino-*p*-toluidophosphoric acid.

Aniltrimethylsuccinic acids.

Anishydroxamic acid.

Anisic acid.

Anthrachryson-2:6-disulphonic acid.

Anthranilic acid.

*l*-Arabonic acid.

Asparagine.

Asparaginic acid.

Aspartic acid.

Avitellac acid.

Barbituric acid.

Bassoric acid.

Benzaldehyde-*o*-sulphonic acid.

Benzeneazoacetonedicarboxylic acid.

Benzeneazo-*o*-nitrosalicylic acid.

Benzeneazosalicylic acid.

Benzenepentacarboxylic acid.

Benzenesulphonic acids.

7-Benzenesulphonoxy-coumarone-4-carboxylic acid.

Benzenethiolsulphonic acid.

Benzene-1:3:5-tricarboxylic acid.

Benzhydroxamic acid.

Benzilic acid.

Benzoic acid.

Benzo- $\beta$ -ketopentamethyleneazine-carboxylic acid.

Benzophenonephosphinic acid.

Benzophenone-*o*-sulphonic acid.

Benzo- $\gamma$ -pyronecarboxylic acid.

Benzoylacetic acid.

*o*-Benzoylaminobenzoic acid.

*p*-Benzoylaminophenylacetic acid.

**Acids.** See:—

$\alpha$ -Benzoylamino- $\beta$ -isopropylacrylic acid.  
Benzoylbenzene-*o*-sulphonic acid.  
Benzoylbenzoic acids.  
Benzoylcarbamide-*o*-sulphonic acid.  
Benzoylcynoacetic acids.  
Benzoylformic acid.  
 $\beta$ -Benzoylglutaric acid.  
Benzoyliminodithiocarbonic acid.  
Benzoylindeneoxalic acid.  
 $\gamma$ -Benzoyl- $\beta$ -phenylbutyric acid.  
2-Benzoyl-3-phenylcyclopentanone-4-carboxylic acid.  
Benzoyldithiocarbamic acids.  
Benzoylthiolcarbanilic acid.  
 $\beta$ -Benzylbutyric acid.  
 $\alpha$ -Benzyleinnamic acid.  
 $\beta$ -Benzylisocrotonic acid.  
Benzylethylaminobenzenesulphonic acid.  
Benzylethylaminobenzoylbenzoic acid.  
Benzylethylaminobenzylbenzoic acid.  
 $\beta$ -Benzyl- $\alpha$ -mono- and -di-ethylbutyric acids.  
Benzyl- $\beta$ -glutaric acid.  
Benzylidenacetooacetic- $\beta$ -amino-crotonic acid.  
Benzylidene- $\beta$ -acetylglutaric acid.  
Benzylideneaniline-4-methyl-2-cyclopentanonecarboxylic acid.  
Benzylidenenitrobutyric acid.  
Benzylidenesulphacetic acid.  
 $\beta$ -Benzylmalamic acids.  
*m*-Benzylmethylaminobenzenesulphonic acids.  
Benzylmethylaminophenylglyoxylic acid.  
 $\beta$ -Benzyl- $\alpha$ -mono- and -di-methylbutyric acids.  
Benzylpiperidinium-bromo-, -chloro-, -iodo-, and -hydroxy-acetic acids.  
Benzylsulphonic acid.  
 $\gamma$ -Benzylvaleric acid.  
Bisazoxyacetic acid.  
Bis-*p*-dimethyl-*o*-carboxycinnamic acid.  
Bis-*p*-dimethylphthalic acid.  
Biscyclopentadienecarboxylic acid.  
*p*-Borobenzoic acid.  
Brassic acid.  
Brassylic acid.  
Brazilic acid.  
Brazilinic acid.  
Bryopogonic acid.  
*iso*Bryopogonic acid.  
Butane- $\alpha\gamma$ -dicarboxy- $\beta$ -acetic acid.  
Butanedicarboxylic acids.  
Butanetetracarboxylic acid.  
*iso*Butylanthranilic acid.  
Butylcinnamic acids.  
Butyric acid.

**Acids.** See:—

*iso*Butyric acid.  
Butyrolactonecarboxylic acid.  
Butyrylacetic acid.  
Butyrylacetoacetic acid.  
Butyryl*iso*butyric acid.  
 $\beta$ -Butyrylglutaric acids.  
 $\beta$ -Butyryloxycrotonic acid.  
Cacodylic acid.  
Caffetannic acid.  
Callitrolic acid.  
Camphanic acid.  
Camphanic acid.  
Camphoformeneaminedicarboxylic acid.  
Campholytic acids.  
*iso*Campholytonic acid (*isolauroic acid*).  
Camphonic acid.  
Camphononic acid.  
Camphopyric acid.  
Camphorenic acid.  
Camphoric acid.  
*apo*Camphoric acid.  
Camphornitrilic acids.  
*iso*Camphoronic acid.  
Camphoroxalic acid.  
Camphorsulphonic acids.  
Capioic acid (*hexoic acid*).  
Cai bamic acid.  
Carbaminodiacetic acid.  
Carbaminoglycylglycine.  
1-Carbamino-5-pyrazolone-3-*p*-nitrobenzeneazoacetic acid.  
Carbazinic acids.  
Carbethoxyglycylglycine.  
Carbolic acid.  
Carbonyl-*p*-tolylcarbazinic acid.  
Carboxyanthranilic acid.  
3-*p*-Carboxybenzoylpicolinic acid.  
*o*-Carboxycinnamic acid.  
2-Carboxy-5-methoxyphenoxyacetic acid.  
Carboxymethylthiocarbamic acid.  
Carboxyphenylbutyrolactoneacetic acid.  
Carboxyphenylhydrazonocynoacetic acid.  
Carpinic acid.  
Carvacroxytummaric acid.  
Cascarillie acid.  
Cereic acid.  
Cetipic acid.  
Chrysazinsulphonic acid.  
Chrysoidine-2-carboxylic acid.  
Cincholeuponic acid.  
Cinchomeronamic acid.  
Cinchomeronic acid.  
Cinchonic acid.  
Cineolic acids.  
Cinnamic acid.  
*allo*Cinnamic acid.  
Cinnamylcacodylic acid.

**Acids.** See:—

Cinnamylidenobarbituric acid.  
 Cinogenic acid.  
 Citraconic acid.  
 Citric acid.  
 Cobalticyanic acid.  
 Coccellinic acid.  
 Coumalic acid.  
*iso*Coumalic acid.  
 Coumalin-6-carboxylic acid.  
*p*-Coumaric acid.  
 Coumarilic acid.  
 Coumarin-4-carboxylic acid.  
 Croconic acid.  
 Crotonic acid.  
 Cuspidatic acid.  
 Cyanic acid.  
 Cyanuric acid.  
 Decanedicarboxylic acid.  
 Decinoic acid.  
 Dehydromucic acid.  
 Diaceticanthranilic acid.  
 Diacetylacetic acid.  
 $\beta\beta$ -Diacetylpropionic acid.  
*iso*Dialuric acid.  
 $\beta$ -Diamylsulphonebutyric acid.  
 $\beta$ -Diamylsulphone- $\alpha$ -mono- and -diethylbutyric acids.  
 $\beta$ -Diamylsulphone- $\alpha$ -mono- and -dimethylbutyric acids.  
 $\beta$ -Diamylsulphonevaleric acid.  
 Diazoacetic acid.  
*iso*Diazoacetic acid.  
 Diazoaminobenzene-2-carboxylic acid.  
 Diazoaminobenzene-2:2'-dicarboxylic acid.  
*o*-Diazoaminobenzoic acid.  
 Diazobenzenesulphonic acid.  
 Dibenzenethiolsulphonic acid.  
 Dibenzoylthylenedicarboxylic acid.  
 Dibenzoylfumaric acid.  
 Dibenzoylhomogentisic acid.  
 Dibenzoylmalic acid.  
 Dibenzylacetonedicarboxylic acid.  
 $\beta$ -Dibenzylmalamic acid.  
 Dibenzylmethane-phosphinic and -phosphamic acids.  
 $\beta$ -Dibenzylsulphonebutyric acid.  
 $\beta$ -Dibenzylsulphone- $\alpha$ -mono- and -diethylbutyric acids.  
 $\beta$ -Dibenzylsulphone- $\alpha$ -mono- and -dimethylbutyric acids.  
 $\gamma$ -Dibenzylsulphonevaleric acid.  
 Dibutyrylacetacetic acid.  
 Dicarboxydimethyltrimethylene-bromo- and -ethyl-malonic acids.  
 Dicarboxydimethyltrimethylene-malonic acid.  
 Dicarboxyglutaconic acid.  
 Dicinnamyltartaric acid.  
 Dicrotonic acid.  
 Diethoxybenzoylpyruvic acids.

**Acids.** See:—

*aa*-Diethylacetonedicarboxylic acid.  
 Diethylamino-benzoyl- and -benzyl-tetrachlorobenzoic acids.  
 Diethylaminohydroxyanthraquinone-sulphonic acid.  
*m*-Diethylaminohydroxybenzoyl-benzoic acid.  
 Diethylamino-*m*-hydroxybenzyl-benzoic acid.  
 Diethylamino-*m*-hydroxy-benzyl- and -benzoyl-tetrachlorobenzoic acids.  
 Diethylaminophenylglyoxylic acid.  
 $\beta\beta$ -Diethylglutaric acid.  
 $\beta$ -Diethylsulphone- $\alpha$ -diethylbutyric acid.  
 $\beta$ -Diethylsulphone- $\alpha$ -dimethylbutyric acid.  
 Difurfuryldicarbinylsuccinic acid.  
 Difurfurylthanedicarboxylic acid.  
 $\alpha\beta$ -Difurfurylidenepropionic acid.  
 Difurfurylidenesuccinic acid.  
 $\beta$ -Diheptoic acid.  
 Dihydroæsculetinsulphonic acid.  
 Dihydroisosalantolic acid.  
 Dihydro- $\alpha$ -campholytic acids.  
 Dihydrocarveolacetic acid.  
 Dihydrocollidenedicarboxylic acid.  
 Dihydrofurfuran-2:5-dicarboxylic acids.  
 Dihydroinfracampholenic acid.  
 Dihydrolauronic acid.  
 Dihydroxyanthraquinonesulphonic acid.  
 3:4-Dihydroxybenzoic acid.  
 Dihydroxyapocamphoric acid.  
 Dihydroxydihydrocampholytic acid.  
 Dihydroxydihydrocyclogeranic acid.  
 Dihydroxydihydrolauronic acid.  
 $\alpha\alpha$ -Dihydroxy- $\beta\beta$ -dimethylglutaric acid.  
 8:8'-Dihydroxy-2:2'-dinaphthylamine-6:6'-disulphonic acid.  
*p*-Dihydroxydiphenyl-4:6-*d*-nitro-1:3-phenylenediaminedicarboxylic acid.  
*p*-Dihydroxydiphenyl-4:6-*d*-nitro-1:3-phenylenediaminedisulphonic acid.  
 Dihydroxyfluorescein.  
 Dihydroxymethoxybenzoic acid.  
 $\beta$ -2:4-Dihydroxyphenylmaleic acid.  
 Dihydroxypivalic acid.  
 Dihydroxystearic acid.  
 Dihydroxytartaric acid.  
 Dihydroxytrismethoxycarminone-carboxylic acid.  
 Diketoapocamphoric acid.  
 Diketodihydropentanthrenedicarboxylic acid.  
 Diketohydrindenecarboxylic acid.  
 2:6-Diketo-4-*isopropyl*hexamethylene-3-carboxylic acid.

**Acids.** See :—

2:6-Diketo-3:4:4-trimethylhexa-  
methylene-3-carboxylic acid.  
Diketovalerolactone- $\gamma$ -carboxylic acid.  
Dilichenostearic acid.  
Dimethoxydiphenyldihydrazonocyano-  
acetic acid.  
6:7-Dimethoxy-3-methylcoumarilic  
acid.  
Dimethoxysuccinic acid.  
 $\alpha\alpha_1$ -Dimethylacetonedicarboxyacetic  
acid.  
Dimethylacrylic acid (*pentenoic acid*).  
 $\alpha\alpha'$ -Dimethyladipic acids.  
 $\beta\beta$ -Dimethyladipic acid.  
 $\delta\delta$ -Dimethylallylacetacetic acid.  
Dimethylaminobenzoylbenzoic acid.  
Dimethylamino-benzoyl- and -benzyl-  
tetrachlorobenzoic acids.  
*p*-Dimethylaminobenzylidenearbituric  
acid.  
Dimethylaminohydroxyanthra-  
quinonesulphonic acid.  
Dimethylaminophenylglyoxylic acid.  
Dimethylanilinethiosulphonic acid.  
Dimethylbenzoic acids.  
6:8-Dimethyl-1:4-benzopyrone-2-carb-  
oxylic acid.  
2:4-Dimethylbenzoylbenzene-*o*-sulph-  
onic acid.  
Dimethyltetraabromohydrindacenedi-  
carboxylic acid.  
Dimethylbutane- $\alpha\gamma\gamma$ -tricarboxylic  
acid.  
 $\beta\beta$ -Dimethylbutane- $\alpha\alpha\delta$ -tricarboxylic  
acid.  
Dimethylcincholeuponic acid.  
2:5-Dimethylcinamic acid.  
Dimethyldihydrophthalidetetronic  
acid.  
Dimethylethylethoxyketopenta-  
methylenedicarboxylic acid.  
 $\alpha\alpha$ -Dimethyl- $\beta$ -ethylhydracrylic acid.  
Dimethylglutaconic acid.  
Dimethylglutaric acids.  
 $\alpha\epsilon$ -Dimethylheptenoic acid.  
Dimethylcyclohexanecarboxylic acids.  
Dimethylhydroxypentamethylenecarboxylic acid.  
Dimethylindacenedicarboxylic acid.  
Dimethylketopentamethylenecarb-  
oxylic acid.  
Dimethylketodicyclopentanecarboxylic  
acid.  
Dimethylketodicyclopentanedicarb-  
oxylic acids.  
5:5-Dimethyl-3-ketodicyclopentane-  
1:2:4-tricarboxylic acid.  
Dimethylketotetramethylenecarb-  
oxylic acids.  
Dimethylketotetramethylenetricarb-  
oxylic acid.

**Acids.** See :—

$\beta\delta$ -Dimethylallævulic acid.  
*as*-Dimethylmalic acid.  
Dimethylmethylenecyanoacetic acids.  
 $\beta\zeta$ -Dimethyl- $\beta\epsilon$ -nonadiene- $\theta$ -one- $\eta$ -  
carboxylic acid.  
 $\beta\zeta$ -Dimethyl- $\beta\epsilon$ -octadiene- $\theta$ -mono- and  
- $\eta\theta$ -di-carboxylic acids.  
2:5-Dimethylcyclopentane-1-mono- and  
-1:1-di-carboxylic acids.  
2:2-Dimethylcyclopentane-5-one-1:1-  
dicarboxylic acid.  
Dimethylphloroglucinolcarboxylic  
acid.  
Dimethylpropane- $\alpha\gamma\gamma$ -tricarboxylic  
acid.  
2:5-Dimethylpyrrole-1-acetic acid.  
Dimethylpyruvic acid.  
*as*-Dimethylsuccinic acid.  
Dimethyl-*m*-toluidineazobenzene-  
sulphonic acid.  
Dimethyltrimethylenedicarboxylic  
acid.  
Dinaphthalenethiolsulphonic acids.  
Dioxidicyanogendicarboxylic acid.  
3:4-Dioxymethylenehydrotropic acid.  
Diphenoxyisopropylphosphorous acid.  
Diphenylamine-6-mono- and -6:6'-di-  
carboxylic acids.  
Diphenylamine-3'-sulphonic acid.  
Diphenylboric acid.  
2:5-Diphenylcarbazine-1-carboxylic  
acid.  
Diphenylcarboxylic acid.  
Diphenyl-4:4'-dicarboxylic acids.  
Diphenyldihydrazonocyanoacetic acid.  
Diphenyleneoxidesulphonic acid.  
*s*-Diphenylethane-4:4'-dicarboxylic  
acid.  
Diphenylglycollic acid.  
Diphenylmethane-3:3'-dicarboxylic  
acid.  
3:6-Diphenylpyridazine-4:5-dicarb-  
oxylic acid.  
2:4-Diphenylsemicarbazide-1-carb-  
oxylic acid.  
2:4-Diphenylsemicarbazide-1-*d*thio-  
carboxylic acid.  
2:4-Diphenylsemithiocarbazine-1-carb-  
oxylic acid.  
Diphenylsulphone-4-carboxylic acid.  
 $\beta$ -Diphenylsulphone- $\alpha$ -ethylbutyric  
acid.  
 $\beta$ -Diphenylsulphone- $\alpha$ -methylbutyric  
acid.  
 $\gamma$ -Diphenylsulphonevaleric acid.  
2:4-Diphenylthiocarbazine-1-carb-  
oxylic acid.  
1:4-Diphenyl-5-thio-1:2:4-triazolone-3-  
sulphonic acid.  
Diphenyl-*p*-tolylacetic acid.  
 $\beta\delta$ -Diphenylvalerolactoneacetic acid,

**Acids. See:—**

Diphenylphthalic acid.  
 Dipropylsulphamic acid.  
 Dipyrromucyltartaric acid.  
 Ditoluenethiolsulphonic acids.  
 Di-*o*-tolylldihydrazonocyanoacetic acid.  
 Di-*p*-tolylloxylisopropylphosphorous acid.  
 Ecgonic acid.  
 Erythric acid.  
 L-Erythronic acid.  
 Ethanedicarboxylic acid.  
 $\beta$ -Ethoxyacrylic acid.  
 Ethoxycaronic acid.  
 7-Ethoxychromone-2-carboxylic acid.  
 Ethoxymethyleneacetoacetic acid.  
 Ethoxymethylenecyanoacetic acid.  
 1-Ethoxynaphthalene-4-sulphonic acid.  
*p*-Ethoxyphenylhydrazonocyanoacetic acid.  
*p*-Ethoxyphenylsuccinamic acid.  
 Ethylacetonedicarboxylic acid.  
 $\alpha$ -Ethyladipic acid.  
*m*-Ethylaminoazobenzenesulphonic acid.  
*m*-Ethylaminobenzenesulphonic acid.  
*o*-Ethylaminobenzoic acid.  
*p*-Ethylaminophenylglyoxylic acid.  
*p*-Ethylamino-*m*-tolylglyoxylic acid.  
 Ethylanthranilic acid.  
 $\beta$ -Ethylsec. butylsulphamic acid.  
 $\beta$ -Ethyl- $\alpha$ -diethylbutyric acid, *dithio*-.  
 $\beta$ -Ethyl- $\alpha$ -dimethylbutyric acid, *dithio*-.  
 Ethylene-*p*-diaminodiphenylglyoxylic acid.  
 Ethylenetetracarboxylic acid.  
 $\alpha$ -Ethylglutaric acid.  
 Ethylidenedi-*o*-aminodibenzoic acid.  
 Ethylidenebisacetoacetic acid.  
 Ethylidenebistetronic acid.  
*i*-Ethylidenelactic acid.  
 Ethylmalonic acid.  
 Ethylpentanetricarboxylic acid.  
 $\alpha$ -Ethylpimelic acid.  
 $\beta\beta$ -Ethylpropylglutaric acid.  
 $\beta$ -Ethylsuccinic acid.  
 Ethylthioncarbanilic acid.  
 $\alpha$ -Ethyltricarballic acid.  
 Eugenoxyacetic acid.  
 Eugenoxyfumaric acid.  
 Euxanthic acid.  
 Evemnric acid.  
 Fencholenic acids.  
 Ferricyanic acid.  
 Ferrisaliclic acid.  
 Ferrocyanic acid.  
 Ficoceroic acid.  
 Filicitanic acid.  
 Fluorescein.  
 Formalinsulphuric acid.  
 Formic acid.

**Acids. See:—**

*ortho*Formic acid.  
 Formylacetic acid.  
*o*-Formylaminobenzoic acid.  
 Formyl-*o*-aminophenylpropionic acid.  
 Formylglutaconic acid.  
 Formylpropionic acid.  
 Formyl-*o*-tolylglycine.  
 Fulminic acid.  
 Fumaric acid.  
 Furfuran-2:4-dicarboxylic acid.  
 $\alpha$ -Furfurylcarbonyl- $\beta$ -furfurylidene-propionic acid.  
 Furfurylidenebarbituric acid.  
 Furfurylidenesuccinic acid.  
 Gallein.  
 Gallic acid.  
 Gallin.  
*cyclo*Geranic acids.  
*d*-Gluconic acid.  
 Glutaconic acid.  
 Glutamic acid.  
 Glutaric acid.  
 Glyceric acid.  
 Glyceroarsenic acid.  
 Glycine.  
 Glycollic acid.  
 Glycuronic acid.  
 Glycylglycine.  
 Glyoxylic acid.  
 Guaiacolsulphonic acid.  
 $\gamma$ -Guanidinebutyric acid.  
 Guanidineglyoxylic acid.  
 Guanylic acid.  
 Gyrophoric acid.  
 Hæmatic acids.  
*m*-Hemipinic acid.  
 Heptanedicarboxylic acids.  
 Heptanetricarboxylic acids.  
*cyclo*Heptenecarboxylic acids.  
 Heptenoic acid.  
 Heptydroxamic acid.  
 Heptoic acids.  
 Heptolactoneacetic acid.  
 Hexadecenoic acid.  
 Hexahydro-xylic acids.  
 Hexanedicarboxylic acids.  
 Hexanetetracarboxylic acids.  
 Hexanetricarboxylic acids.  
 $\Delta'$ -*cyclo*Hexenecarboxylic acid.  
 $\beta$ -Hexene- $\epsilon$ -one- $\gamma\delta$ -dicarboxylic acid.  
 Hexenoic acids.  
 Hexoic acid.  
*iso*Hexoic acid.  
 Hexoylactic acid.  
*iso*Hexoyliso-butyric acid.  
 Hexylpropionic acid (*noninoic acid*).  
 Hippuric acid.  
 Homopilopie acid.  
 Humic acids.  
 Hydantoic acid.  
 Hydrazicetic acid.



**Acids. See:—**

*iso*Hydrochelidonic acid.  
 Hydrocyanic acid.  
 $\beta$ -Hydroxyacrylic acid.  
 Hydroxybenzoic acids.  
*o*-Hydroxybenzoylformic acid.  
 $\beta$ -Hydroxybenzylglutaric acid.  
*p*-Hydroxybenzylidenearbituric acid.  
*p*-Hydroxybenzylidenetoluidinesulphonic acids.  
 $\alpha$ -Hydroxy- $\beta$ -butenoic acid.  
 $\beta$ -Hydroxybutyric acid.  
 $\alpha$ -Hydroxycamphorcarboxylic acid.  
 $\beta$ -Hydroxycamphoronic acid.  
 6-Hydroxy-5-carboxylamino-2-picoline-3-carboxylic acid.  
*p*-Hydroxycarboxyphenylhydrazonocynoacetic acid.  
 7-Hydroxycoumarone-3-carboxylic acid.  
 7-Hydroxycoumarone-4-carboxylic acid.  
 Hydroxydihydrocampholytic acid.  
 Hydroxydiketohydrindenecarboxylic acid.  
 $\beta$ -Hydroxy- $\alpha\alpha$ -dimethylvaleric acid.  
 Hydroxydiphenylacetic acid.  
 4'-Hydroxydiphenylamine-6-carboxylic acid.  
 2-Hydroxy-4-ethoxybenzoylpyruvic acid.  
 Hydroxyethylaminoformic acid.  
 Hydroxyethylglutaric acid.  
 Hydroxyfenchenic acids.  
 Hydroxyhexahydroxylic acids.  
*p*-Hydroxyhydratropic acid.  
 2-Hydroxy-3-*o*-hydroxyphenylquinoxalinesulphonic acid.  
 $\delta$ -Hydroxy- $\alpha$ -hydroxyisopropylhexoic acid.  
 Hydroxyketodihydrocyclogeranic acid.  
 $\kappa$ -Hydroxy- $\iota$ -ketoundecoic acid.  
 Hydroxylaminoisobutyric acid.  
 Hydroxymercuribenzoic acid.  
 $\beta$ -Hydroxy- $\alpha$ -methylbutyric acid.  
 Hydroxymethylenecamphorophosphinic acid.  
 Hydroxymethylenecyanoacetic acid.  
 Hydroxymethyleneglutaconic acid.  
 $\delta$ -Hydroxy- $\alpha$ -methylhexoic acid.  
 5-Hydroxy-12-methylisonaphthaphenazonium-3-sulphonic acid.  
 $\delta$ -Hydroxy- $\alpha$ -naphthylamine-4-sulphonic acid.  
 1-Hydroxynicotinic acid.  
 Hydroxyphenylcinnamic acid.  
 6-Hydroxy-3-phenyl- $\psi$ -phenanthroline-2-carboxylic acid.  
 6-Hydroxy-2-phenylpyrimidine-4-carboxylic acid.  
*p*-Hydroxyphenyl-*m*-tolylaminesulphonic acid.

**Acids. See:—**

Hydroxyisophthalic acid.  
 6-Hydroxy-2-picoline-3-carboxylic acid.  
 6-Hydroxy-2-picoline-3:5-dicarboxylic acid.  
 Hydroxypilocarpinic acid.  
 Hydroxypivalic acid.  
 $\alpha$ -Hydroxypropionic acid.  
 $\alpha$ -Hydroxyisopropylhexoic acid.  
 Hydroxyquinolcarboxylic acid.  
 4-Hydroxyquinoline-2-carboxylic acid.  
 4-Hydroxyquinoline-3-carboxylic acid.  
 7-Hydroxy-2-quinolone-4-acetic acid.  
 Hydroxyquinolphthalein.  
 Hydroxyrocellic acid.  
*m*-Hydroxysulphobenzoic acid.  
 Hydroxytetrahydrofurfuran-2:5-dicarboxylic acid.  
 Hydroxytoluic acid.  
 2-Hydroxy-*m*-toluic acid.  
*p*-Hydroxytolylidiphenylacetic acids.  
 Hydroxytriazolesulphonic acids.  
*p*-Hydroxytriphenylacetic acid.  
 Hydroxytrismethoxycarminonecarboxylic acid.  
 $\omega$ -Hydroxyundecylic acid.  
 $\delta$ -Hydroxy- $\gamma$ -valerolactone- $\alpha$ -carboxylic acid.  
 5-Hydroxy-1:3-xylene-4-sulphonic acid.  
 Ichthulic acid.  
 Imbricacic acid.  
 Indenexalic acid.  
 Indoxylic acid.  
 Infracampholenic acid.  
 Jalapic acid.  
 Kauric acid.  
 Kaurinolic acids.  
 Kaurollic acids.  
 Ketobutylidenebistetroneic acid.  
 $\zeta$ -Keto- $\beta\epsilon$ -dimethylctoic acid.  
 Ketohexyltetroneic acid.  
 $\alpha$ -Keto- $\gamma$ -hydroxybutane- $\alpha\gamma$ -dicarboxylic acid.  
 Ketohydroxy-ethoxy- and -isobutoxydihdropentanthrenedicarboxylic acids.  
 $\alpha$ -Ketovalerolactone- $\alpha$ -carboxylic acid.  
 Kynurenic acid.  
 Lactic acids.  
*iso*Lauronic acid (*isocampholytonic acid*).  
 Lauronolic acid.  
*iso*Lauronolic acid.  
 Leucine.  
*d*-Leucinebenzenesulphonic acid.  
 Leuconic acid.  
 Lichenostearic acids.

**Acids.** See:—

Lichestronic acid.  
 Lobaric acid.  
 Lotusinic acid.  
 Lupulinic acid.  
 $\beta$ -Malamic acids.  
 Maleic acid.  
 Malephenylamic acid.  
 Malic acids.  
 Malonic acid.  
 Melanic acid.  
 Mellitic acid.  
 Mercuribenzoic acid.  
*o*-Mercuridibenzoic acid.  
 Mercuriguaiacolsulphonic acid.  
 Mercuriphenoldisulphonic acid.  
 Mesaconic acid.  
 Mesitylenic acid.  
 Mesotartaric acid.  
 $\beta$ -Methoxyacrylic acid.  
*p*-Methoxyatrolactic acid.  
 Methoxycarminonecarboxylic acid.  
 Methoxycarminonedicarboxylic acid.  
 Methoxycaronic acid.  
 7-Methoxycoumarone-4-carboxylic acid.  
 Methoxymethylenecyanoacetic acid.  
*m*-Methoxyphenoxycetic acid.  
 Methoxyphenylglyoxylic acid.  
 Methoxyphenylhydrazonocycanoacetic acids.  
*p*-Methoxytriphenylacetic acid.  
 Methylacetonedicarboxylic acid.  
 Methylacetylaminobenzoic acid.  
 $\alpha$ -Methylacrylic acid.  
 Methyladipic acids.  
*m*-Methylaminobenzenesulphonic acid.  
 Methylaminobenzoic acid.  
 4-Methylaminophenyl- $\mu$ -cyanoazomethinecarboxylic acid.  
*p*-Methylaminophenylglyoxylic acid.  
 Methylanthranilic acid.  
 Methylbenzo- $\beta$ -ketopentamethyleneazinecarboxylic acid.  
*p*-Methylbenzoylbenzene-*o*-sulphonic acid.  
*p*-Methyl-*o*-benzylbenzoic acid.  
*p*-Methylbenzylideneacetoacetic acid.  
*p*-Methylbenzylidenebisacetoacetic acid.  
 $\beta$ -Methyl- $\gamma$ -bromoethylglutaric acid.  
 Methylbutane- $\alpha\beta\gamma\gamma$ -tetracarboxylic acids.  
 Methylbutane- $\sigma\beta\gamma$ -tricarboxylic acids.  
 $\beta$ -Methylbutane- $\alpha\gamma\gamma$ -tricarboxylic acid.  
 $\beta$ -Methyl- $\beta$ -butenoic acid.  
 $\beta$ -Methyl- $\alpha$ -isobutyladipic acid.  
 $\beta\beta$ -Methylbutylglutaric acid.  
 Methylbutylhydraerylic acids.  
 $\alpha$ -Methylbutyric acid (*valeric acid*).

**Acids.** See:—

Methylbutyrylacetic acid.  
 2-Methylcamphenepyrrole-3-carboxylic acids.  
 Methylcamphoroxalic acid.  
 Methylcarbanilic acid.  
 $\alpha$ -Methylcinnamic acid.  
 Methylcrotonic acids (*pentenoic acids*).  
 Methyl-*dimethylol*acetic acid.  
 Methylene-*o*-aminobenzoic acid.  
 Methylene-*di-o*-aminodibenzoic acid.  
 Methylenebistetric acid.  
 $\alpha$ -Methyleneglutaric acid.  
 $\beta$ -Methyl- $\alpha$ -ethylglutaric acid.  
 $\beta$ -Methyl- $\beta$ -ethylglutaric acid.  
 $\alpha$ -Methyl- $\beta$ -ethylhydraerylic acid.  
 $\beta$ -Methyl- $\alpha$ -ethylideneglutaranilic acid.  
 $\beta$ -Methyl- $\alpha$ -ethylideneglutaric acid.  
 Methyl-ethylketotetramethylenecarboxylic acids.  
 Methyl-ethylketotetramethylenetricarboxylic acid.  
 $\alpha$ -Methylglutaric acid.  
 $\delta$ -Methyl- $\beta$ -heptene- $\zeta$ -one- $\gamma\epsilon$ -dicarboxylic acid.  
 $\beta$ -Methylcyclohexanolacetic acid.  
 Methylcyclohexanolbutyric acid.  
 Methylcyclohexanolpropionic acid.  
 1-Methyl-2-cyclohexanonecarboxylic acid.  
 $\beta$ -Methylcyclohexeneacetic acid.  
 $\beta$ -Methyl- $\gamma\delta$ -hexenoic acid (*heptenoic acid*).  
 $\beta$ -Methylhexoic acid (*heptoic acid*).  
 $\beta$ -Methylhexolactone- $\gamma$ -carboxylic acid.  
 Methylketotetramethylenecarboxylic acid.  
 Methylketotetramethylenetricarboxylic acid.  
 Methylmalonic acid.  
 3-Methylisooxazole-5-carboxylic acid.  
 Methylpentane- $\alpha\beta\gamma\gamma$ -tetracarboxylic acids.  
 Methylcyclopentanolacetic acid.  
 Methyl-2-cyclopentanolcarboxylic acids.  
 Methyl-2-cyclopentanonecarboxylic acid.  
 3-methyl- $\Delta^1$ -cyclopentenecarboxylic acid.  
 9-Methylphenanthroline-7-carboxylic acid.  
 3-Methyl- $\psi$ -phenanthroline-2-carboxylic acid.  
 $\alpha$ -Methylpimelic acid.  
 $\beta$ -Methylpropane- $\alpha\beta\gamma\gamma$ -tetracarboxylic acid.  
*o*-Methylisopropylbenzenesulphonic acids.

**Acids.** See:—

Methylpropyl-1:4-benzopyrone-2-carboxylic acids.  
 $\beta\beta$ -Methylpropylglutaric acid.  
 4-Methyl-1-isopropyl-2-cyclopentanone-carboxylic acid.  
 2-Methyl-5-isopropylphenylacetic acid.  
 Methylpropylpyrazole-4-carboxylic acids.  
 Methylpyrazolecarboxylic acids.  
 5-Methylpyrazole-4:5-dicarboxylic acid.  
 Methylpyrazolinecarboxylic acids.  
 5-Methylpyrazoline-4:5-dicarboxylic acid.  
 5-Methylpyrimidinecarboxylic acid.  
 1-Methylquinolinesulphonic acid.  
 $\beta\beta$ -Methylquinoxaline-2:3-diacetic acid.  
 Methylsuberolacetic acid.  
 Methylsuccinic acid.  
 Methyltetrahydroquinoliniumiodo-acetic acid.  
 Methylthio- $\psi$ -uric acid.  
 3-Methylthiouric acid.  
 4-methylumbelliferone-8-diazosulphonic acid.  
 Methyluric acid.  
 $\gamma$ -Methylvaleric acid.  
 Mucobiomic acid.  
 Mucochloric acid.  
 Mucophenoxybromic acid.  
 $\beta$ -Naphthalenezodiethylsuccinic acid.  
 Naphthalene-1:8-dicarboxylic acid.  
 Naphthalenesulphonic acids.  
 Naphthalenethiolsulphonic acids.  
 Naphthalic acid.  
 Naphthapieric acid.  
 1:4-Naphthaquinol-3-acetoacetic acid.  
 $\beta$ -Naphthaquinoline-1:3-dicarboxylic acid.  
 1:4-Naphthaquinol-3-malonic acid.  
 $\alpha$ -Naphthaquinone-3-acetoacetic acid.  
 1:4:7:10-Naphthate-tetrazine-2:3:8:9-tetracetic acid.  
 $\beta$ -Naphtholazodiphenylhydrazonocynoacetic acid.  
 Naphthol-7-sulphonic acid.  
 $\alpha$ -Naphthol-4-sulphonic acid.  
 $\beta$ -Naphthoxyacetic acid.  
 Naphthylallophanic acids.  
 $\alpha$ -Naphthylaminesulphonic acids.  
 Naphthylcarbazinic acids.  
 1- $\beta$ -Naphthyl-5-methylpyrazole-3:4-dicarboxylic acid.  
 Nicotinic acid.  
*iso*Nicotinic acid.  
 $n$ -Nonanedicarboxylic acid.  
 Noninoic acid.  
 Nonylenic acid.  
 $\Delta^2$ -4-Norcaradiene-7-carboxylic acid.  
 Norcarandicarboxylic acid.

**Acids.** See:—

Nucleic acids.  
 Ocellatic acid.  
 $\alpha$ -Octinoic acid.  
 Octoic acid.  
 Olivetoric acid.  
 Olivetorinic acid.  
 Opianic acid.  
 Orbiculate acid.  
 Orygmænic acid.  
 Osmylloxalic acid.  
 Oxalacetic acid.  
 Oxaldiacetic acid.  
 Oxalic acid.  
 $\gamma$ -Oxalocrotonic acid.  
 Oxalyl-diethylacetoacetic acid.  
 Oxalyl-dimethylacetoacetic acid.  
 Oxanilic acid.  
 5-*iso*Oxazolone-3-*p*-nitrobenzeneazo-acetic acid.  
 Oxynitriloformic acid.  
 Pannaric acid.  
 Parannucleic acid.  
 Pelargonic acid (*nonoic acid*).  
 Pentanedicarboxylic acids.  
 Pentanetetracarboxylic acids.  
 Pentanetricarboxylic acids.  
 2-*cyclo*Pentanolcarboxylic acid.  
*cyclo*Pentanonecarboxylic acid.  
 $n$ -Pentenecarboxylic acid.  
*cyclo*Pentene-1-carboxylic acid.  
 Pentenoic acids.  
 Perphthalic acid.  
 Phenacetyl-*isobutyric* acid.  
 Phenacyllævulic acid.  
 $\gamma$ -Phenacyl- $\gamma$ -phenylpyrotartaric acid.  
 $\psi$ -Phenanthroline-1:3-dicarboxylic acid.  
 Phenethylidenepyrotartaric acid.  
 Phenethylitaconic acid.  
 Phenethylpyrotartaric acid.  
 Phenoxyacetic acids.  
 Phenozybenzoic acid.  
 $\beta$ -Phenoxycrotonic acid.  
 Phenoxy-*d*initrophenylmalonic acid.  
 Phenoxy-*p*-tolyl-*oxyisopropyl*phosphorous acid.  
 Phenylacetic acid.  
 $\psi$ -Phenylacetic acid.  
 $\beta$ -Phenylacrylic acid.  
 Phenylalanines.  
 $\delta$ -Phenyl- $\beta$ -amino- $\beta$ -heptene- $\zeta$ -one- $\gamma$ -dicarboxylic acid.  
 $p$ -Phenylaminophenylglyoxylic acid.  
 Phenyl-*p*-anisylcarbazide-1-carboxylic acids.  
 7-Phenylbenzotriazin-8-one-5-*p*-benzoic acid.  
 2-Phenyl-4-benzylsemicarbazide-1-carboxylic acid.  
 Phenylbromohomocampholic acid.

**Acids. See:—**

$\beta$ -Phenyl-*n*-butane- $\alpha\gamma\delta$ -tricarboxylic acid.  
 $\beta$ -Phenyl- $\beta$ -butenoic acid.  
 Phenylbutyrolactoneacetic acid.  
 Phenylcarbamindimethylacrylic acid.  
 Phenylcarbimino-2-pyrrolidinecarboxylic acid.  
 Phenylisocrotonic acid.  
 2-Phenyl-4:5-dibenzylcarbazine-1-carboxylic acid.  
 2-Phenyl-5-dibenzylcarbazine-1-carboxylic acid.  
 2-Phenyl-5-diethylcarbazine-1-carboxylic acid.  
 Phenyl dimethylammoniumiodoacetic acid.  
 $p$ -Phenylenedichlorodipropionic acid.  
 1:3-Phenylenediamine-4-sulphonic acid.  
 Phenylenediaminethiosulphonic acid.  
 $p$ -Phenylenediisobutyric acid.  
 Phenylethylene-oxide-carboxylic acid.  
 Phenylethylidenetetroneic acid.  
 $\beta$ -Phenyl- $\alpha$ -mono- and -di-ethylbutyric acids.  
 $\beta$ -Phenyl- $\alpha$ -ethylisocrotonic acid.  
 Phenylglutaric acid.  
 Phenylglycine-*o*-carboxylic acid.  
 Phenylglyoxylic acid.  
 Phenylheptadecenoic acid.  
 2-Phenylhydrazinocyclopentene-1-carboxylic acid.  
 Phenylhydrazonocycanoacetic acid.  
 Phenylhydroxyhomocampholic acid.  
 Phenylmethyl-*n*-acetylglutarimide- $\alpha$ -carboxylic acid.  
 $\beta$ -Phenyl- $\alpha$ -mono- and -di-methylbutyric acids.  
 Phenylmethylcarbamic acid.  
 $\beta$ -Phenyl- $\alpha$ -methylisocrotonic acid.  
 Phenylmethyl- $\alpha$ -cyanoglutaric acid.  
 $\beta$ -Phenyl- $\alpha$ -methylglutaric acid.  
 Phenylmethylglutarimide- $\alpha$ -carboxylic acid.  
 $\beta$ -Phenylmethylhydracrylic acid.  
 2-Phenyl-5-methylphenylcarbazine-1-carboxylic acid.  
 2-Phenyl-4-methylphenylsemicarbazidecarboxylic acid.  
 $\beta$ -Phenyl- $\alpha$ -methyl- $\alpha\alpha\gamma$ -propanetricarboxylic acid.  
 1-Phenyl-3-methylpyrazole-4-carboxylic acid.  
 Phenylmethylpyrazoledicarboxylic acids.  
 1-Phenyl-5-methylpyridazone-3-carboxylic acid.  
 Phenylmethylsemicarbazide-1-carboxylic acids.  
 Phenyl-naphthionic acid.

**Acids. See:—**

Phenyl- $\alpha$ - and - $\beta$ -naphthylamine-6-carboxylic acids.  
 1-Phenyl-4-*p*-nitrobenzeneazo-5-pyrazolone-3-acetic acid.  
 Phenylnitrososulphazonesulphonic acid.  
 Phenyl-*p*-nitro-*o*-tolylsulphonesulphonic acid.  
 Phenyl- $\alpha$ -oxyacrylic acid.  
 3-Phenylcyclopentanone-4-carboxylic acid.  
 3-Phenylcyclopentanonedicarboxylic acid.  
 9-Phenylphenanthroline 7-carboxylic acid.  
 3-Phenyl- $\psi$ -phenanthroline-2-carboxylic acid.  
 9-Phenylphenanthrolinesulphonic acid.  
 3-Phenyl- $\psi$ -phenanthroline-6-sulphonic acid.  
 1-Phenyl-3-phenylquinolineazone-*p*-carboxylic acid.  
 $\alpha$ -Phenylpropane- $\alpha\beta\gamma$ -tricarboxylic acid.  
 Phenylpropionic acid.  
 1-Phenylpyrazole-4-carboxylic acid.  
 1-Phenyl-5-pyrazolone-3-*p*-nitrobenzeneazoacetic acid.  
 Phenylpyrid-*o*-oxazinone-*p*-carboxylic acid.  
 3-Phenylpyridylketone-*p*-carboxylic acid.  
 $\beta$ -5-Phenylpyrrolpropionic acid.  
 Phenylpyruvic acid.  
 $o$ -Phenylsulphonebenzoic acid.  
 Phenylthiocarbazineic acid.  
 Phenylthiocarbiminoacetic acid.  
 Phenylthiolcarbazineic acid.  
 Phenylthioncarbazineic acid.  
 3-Phenylthionuric acids.  
 Phenyl-*p*-tolylcarbazine-1-carboxylic acids.  
 Phenyl-*p*-tolylsemicarbazide-1-carboxylic acid.  
 1-Phenyl-1:2:3-triazole-4:5-dicarboxylic acid.  
 $\alpha$ -Phenyltricarboxylic acid.  
 Phenyluraminocrotonic acid.  
 Phenylvaleric acids.  
 Phloroglucinolcarboxylic acid.  
 Phthalaldehydic acid.  
 Phthalazonecarboxylic acid.  
 Phthalic acid.  
*iso*Phthalic acid.  
 $\delta$ -Phthalimino- $\alpha$ -bromovaleric acid.  
 $\gamma$ -Phthaliminobutyric acid.  
 $\beta$ -Phthaliminoethylbromomalonic acid.  
 $\gamma$ -Phthaliminopropylbromomalonic acid.  
 $\beta$ -Phthaloylglutaric acid.

**Acids. See:—**

Piceapimaric acid.  
 Piceapimarinic acid.  
 Piceapimarolic acid.  
 Picric acid.  
*iso*Picric acid.  
*iso*Pilocarpinic acid.  
 Pilopic acid.  
 Pilopinic acid.  
 Piluvic acid.  
 Pimaric acids.  
 Pimarinic acid.  
 Pimarolic acid.  
*n*-Pimelic acid.  
 Pinocampholenlic acid.  
*l*-Pipicolinic acid.  
 2:6-Piperidinedicarboxylic acids.  
 Piperidinesulphonic acids.  
 2-Piperidino- $\alpha$ -naphthaquinone 3-malonic acid.  
 Piperonalhydroxamic acid.  
 Piperonylacrylic acid.  
 Piscidic acid.  
 Plicatic acid.  
 Propanedicarboxylic acids.  
 Propiobistetric acid.  
 Propionic acid.  
 Propionylacetic acid.  
 Propionylformic acid.  
 Propionyl*iso*propylacetic acid.  
 Propylacetonedicarboxylic acid.  
 *$\beta$ -iso*Propyl- $\alpha$ -acetylbutyric acid.  
 *$\alpha$ -*Propyladipic acid.  
*n*-Propylanthranilic acid.  
 *$\alpha$ -*Propylbutanetricarboxylic acid.  
 *$\alpha$ -iso*Propyl- $\beta$ -isobutylhydracrylic acid.  
 Propylenedicarboxylic acids.  
 *$\alpha$ -*Propylglutaric acid.  
 *$\alpha$ -iso*Propylglutaric acid.  
*iso*Propylidenebistetric acid.  
 Propylmalonic acid.  
*iso*Propylpiperidiniumbromoacetic acid.  
 *$\alpha$ -*Propylpropanetricarboxylic acid.  
 Protocatechuic acid.  
 Psyllostearic acid.  
 Purge acid.  
 Pyrazole-3:4:5-tricarboxylic acid.  
 Pyrazolinecarboxylic acids.  
 Pyrazoline-3:4:5-tricarboxylic acid.  
 Pyrazolone-3-carboxylic acid.  
 Pyridine-3-carboxylic acid.  
 Pyridinedicarboxylic acids.  
 Pyridine-2:3:4-tricarboxylic acid.  
 *$\beta$ -*Pyridiniummalic acids.  
 Pyridoxazinone-*p*-benzoic acid.  
 Pyrogalloldisulphonic acid.  
 Pyrogallolsulphonic acid.  
 Pyromellitic acid.  
 Pyromucic acid.  
*iso*Pyromucic acid.

**Acids. See:—**

Pyromucylhydroxamic acid.  
 *$\alpha$ -*Pyrone- $\alpha'$ -carboxylic acid.  
 Pyrotartaric acids.  
 Pyrrolidine-2-carboxylic acid.  
 Pyruvic acid.  
 Quinic acid.  
 Quinolinic acid.  
 Quinoliniumiodoacetic acid.  
 2-Quinolone-4-acetic acid.  
 Quinoxaline-2:3-diacetic acid.  
 Racemic acid.  
 Resoreylmaleic acid.  
 Rhodizonic acid.  
 Rosolic acid.  
 Rubazonic acid.  
 Rubidic acid.  
 Salicylhydroxamic acid.  
 Salicylic acid.  
 Salicylidenebisbarbituric acid.  
 Santalenic acid.  
 Sarcosine.  
 Selenocyanic acid.  
 Silveolic acid.  
 Silvinoic acids.  
 Sorbic acid.  
 Squamatic acid.  
 Stearic acid.  
 Stilbene-*o*-carboxylic acid.  
 Styrylitaconic acid.  
 Subereneacetic acid.  
 Suberyldihydroxamic acid.  
 Succinic acid.  
*iso*Succinic acid.  
*p*-Sulphanilic acid.  
 5-Sulphanilino-7-methylnaphthaphenazonium-3-sulphonic acid.  
 4-Sulphanilino-1:2-naphthaquinone-6-sulphonic acid.  
*o*-Sulphobenzoic acid.  
*o*-Sulphomercuribenzoic acid.  
 Sulphophenylglycine-1-carboxylic acids.  
 Sulphosalicylic acid.  
 Tannic acid.  
 Tartaric acid.  
 Terpenylic acid.  
 Tetradecylacetylenecarboxylic acid (*tetradecylpropionic acid*).  
 Tetradecylacetylenesulphonic acid.  
 Tetraethyldiacetydic acid.  
 $\Delta^1$ -Tetrahydrobenzoic acid.  
 Tetrahydroisophthalic acid.  
 Tetrahydroquinoliniumiodoacetic acid.  
 Tetrahydroquinolylacetic acid.  
 Tetrahydrothiophentetracarboxylic acid.  
 Tetrahydroureic acid.  
 Tetrahydroxyanthraquinone-3:6-disulphonic acid.  
 Tetrahydroxylic acids.

**Acids.** See:—

Tetraketohydrindacenedicarboxylic acid.  
 Tetramethylenetetracarboxylic acid.  
 Tetrazoditolylsulphonic acid.  
 Tetrazolesulphonic acid.  
 Tetric acid.  
 Thamninic acid.  
 Thiocyanic acid.  
 Thujoleacetic acid.  
*iso*Thujoleacetic acid.  
 Thujonoxyglycuronic acid.  
 Thymoquinonemalonic acid.  
 $\beta$ -Thymoxycinnamic acid.  
 Thymoxyfumaric acid.  
 Tiglic acid (*pentenoic acid*).  
*p*-Tolueneazodiacetylsuccinic acid.  
 Toluenediazoaminobenzoic acids.  
 Toluene-*p*-sulphinic acid.  
 Toluene-*p*-sulphonic acid.  
 Toluene- $\omega$ -sulphonic acid.  
*p*-Toluenethiolsulphonic acid.  
 Toluic acids.  
 Toluidinoacetic acids.  
*p*-Toluidinoanilinophosphoric acid.  
*m*-Toluidinoazobenzoic acid.  
*o*-Toluidinodiacetic acid.  
 Toluidinopropionic acids.  
 Toluoyl- $\gamma$ -pyronecarboxylic acids.  
 Toluoylbenzoic acid.  
*p*-Toluoyl*isobutyric acid*.  
 3-*p*-Toluoylpicolinic acid.  
*p*-Tolylallopahnic acid.  
*p*-Tolylcarbazinic acid.  
 4-*p*-Tolyl-2:6-dimethyldihydropyridine-3:5-dicarboxylic acid.  
 $\beta$ -*p*-Tolylglutaric acid.  
*o*-Tolylglycine.  
*m*-Tolylglyoxylic acid.  
*p*-Tolylhydrazine- $\alpha$ -thiocarbonylchloride- $\beta$ -carboxylic acid.  
 5-*p*-Tolyl-3-methylcyclohexenone-4:6-dicarboxylic acid.  
 1-*p*-Tolyl-5-methylpyrazole-4-mono- and -3:4-di-carboxylic acids.  
*p*-Tolynaphthionic acid.  
 Tolyloxyfumaric acids.  
 Tragacanthan-xylan-bassoric acids.  
 Triazobenzoic acids.  
 2-Triazo-3:5-dimethylbenzoic acid.  
 Tribenzophosphinic acid.  
 Tribenzylacetonedicarboxylic acid.  
 Triethylammoniumiodoacetic acid.  
 $\alpha\beta\gamma$ -Trihydroxybutyric acid.  
 Trimesic acid.  
 2:4:6-Trimethoxybenzoylpyruvic acid.  
 $\alpha\beta\beta$ -Trimethyladipic acid.  
 Trimethylbenzoic acids.  
 Trimethylbenzoylbenzene-*o*-sulphonic acids.  
 Trimethylchlorobutanetricarboxylic acid.

**Acids.** See:—

Trimethylcincholeuponic acid.  
 Trimethylenecarboxylic acid.  
 Trimethylenetricarboxylic acid.  
 $\alpha\beta\beta$ -Trimethylglutaric acid.  
 Trimethylketodicyclopentane-mono- and -di-carboxylic acids.  
 Trimethylketodicyclopentanetricarboxylic acid.  
 $\beta\beta\gamma$ -Trimethylpentane- $\alpha\gamma$ -olidoic acid.  
 Trimethylsuccinic acid.  
 Triphenylacetic acid.  
 Triphenyltrimesic acid.  
 Triundecenoic acid.  
 $\psi$ -Tropinecarboxylic acid.  
 Tyrosine.  
 Umbelliferonecarboxylic acids.  
 Umbilicic acid.  
 Umbilicarinic acid.  
 Uncinatic acid.  
 Undecanedicarboxylic acid.  
 Undecenoic acid.  
 Undecylenic acid.  
 Undecylic acid.  
 Urano-oxalic acid.  
 Uric acid.  
 Usnic acids.  
 Usnidic acid.  
 Valerhydroxamic acid.  
 Valeric acids.  
 Valerolactoneacetic acid.  
 Valerolactonecarboxylic acids.  
*iso*Valerylanthranilic acid.  
 Veratric acid.  
 Vinylglycollic acid.  
 Xylanbassoric acid.  
*m*-Xylenediazoaminobenzoic acid.  
 Xylenesulphinic acids.  
 Xylenesulphonic acids.  
*m*-5-Xylenol-4-sulphonic acid.  
 $\beta$ -*m*-Xylenoxycinnamic acid.  
*m*-Xylenoxyfumaric acid.  
 Xylic acid.  
 1:2:4-Xylidine-6-sulphonic acid.  
*l*-Xylonic acid.  
 Xyllyboric acids.  
*p*-Xylylenedichlorodimalonic acid.  
*m*-Xylylenediacteoacetic acid.  
*p*-Xylylenedimethyldimalonic acid.  
 $\beta$ -2:5-Xylylpropionic acid.  
**Acolic acid** and its salts (HESSE), A., i, 86.  
**Aconitine**, physiological action of (CASH and DUNSTAN), A., ii, 613.  
 estimation of, in preparations of aconite (ECALLE), A., ii, 707.  
**Acridine** (EDINGER and ARNOLD), A., i, 753.  
**Acridine colouring matters**, preparation of (BADISCHE ANILIN- and SODA-FABRIK), A., i, 753.  
**Acridone**, 1:3-dinitro- (COHN), A., i, 642.

**Acridone**, thio- (KALLE & Co.), A., i, 752.  
5-thio- (EDINGER and ARNOLD), A., i, 753.

**Acrylethylanilide** (BISCHOFF), A., i, 527.

**Acrylic acid**, polymerisation of (v. PECHMANN and RÖHM), A., i, 253.

**Acrylic acid**, methyl ester, preparation of (RÖHM), A., i, 251.

action of diazomethane on (v. PECHMANN and BURKARD), A., i, 167.

**Acrylic acid**,  $\beta$ -amino- $\alpha$ -cyano-, esters (DE BOLLEMONT), A., i, 131.

**Acrylic acids**, substituted, action of fuming nitric acid on (WAHL), A., i, 663.

**Actiniae**, intracellular digestion and enzymes in (MESNIL), A., ii, 562.

**Actinium compounds**, radio-activity induced by (CURIE and DEBIERNE), A., ii, 217.

**Actinolite** from Bosnia (KIŠPATIĆ), A., ii, 321.

**Acylarylamines**, alkylation of (LANDER), T., 690; P., 1901, 59.

**Acyl groups**, wandering of (CLAISEN and HAASE), A., i, 118; (WISLICENUS and KÖRBER), A., i, 187.

**Acylhalogenalkylamines**, constitution of (STIEGLITZ and SLOSSON), A., i, 462.

**Address** to His Majesty the King and his reply; P., 1901, 20, 53.

congratulatory, to Glasgow University, P., 1901, 161.

to Professor Markownikoff and his reply, P., 1901, 1, 83.

presidential (THORPE), T., 871; P., 1901, 70.

**Adipic acid** (*butanedicarboxylic acid*), preparation of (MELLOR), T., 130; P., 1900, 215.

new synthesis of (HAMONET), A., i, 247.

dianilide of (BOUVEAULT and TETRY), A., i, 364.

**Adipic acid**,  $\beta$ -bromo- (WILLSTÄTTER and HOLLANDER), A., i, 561.

**Adrenalin** (ALDRICH), A., ii, 564.

**Aërobacter**, a new genus (BEYERINCK), A., ii, 119.

**Æscorceinsulphonic acid**, sodium salts and dibromo-derivative (LIEBERMANN and WIEDERMANN), A., i, 736.

**Æsculetin-3- and -4-carboxylic acids** and their ethyl esters (v. PECHMANN and v. KRAFFT), A., i, 286.

#### AFFINITY, CHEMICAL:—

**Affinity**, measurement of the work done by (COHEN and VISSER), A., ii, 376.

change of position of free, in dissociated groups (LAPWORTH), T., 1266; P., 1901, 93.

#### AFFINITY, CHEMICAL:—

**Affinity** of acids, method of determination of the relative (FENTON and JONES), T., 92; P., 1900, 205; 1901, 24.

**Affinity coefficient** of methyl  $\alpha$ -cyano- $\beta$ -hydroxyacrylate (DE BOLLEMONT), A., i, 117.

**Mass action**, applicability of the law of, to strong electrolytes (v. STEINWEHR), A., ii, 539.

**Reactive power**, relation between constitution and (WEGSCHEIDER), A., ii, 229.

**Reversible action**,  $2CO \rightleftharpoons CO_2 + C$  (BOUDOUARD), A., ii, 314, 646, 651.

**Chemical reactions** in dissolved or gaseous systems (PONSOT), A., ii, 542.

**Reactions**, molecular and ionic, difference between (ROHLAND), A., ii, 152.

**Catalytic actions** (RUFF), A., ii, 500. chemical, theory of (EULER), A., ii, 57, 376; (ZENGELIS), A., ii, 151.

reciprocal influence of two, in the same medium (COPPADORO), A., ii, 544.

of iron salts (MANCHOT and WILHELM), A., ii, 658.

of colloidal platinum on gas cells (HÖBER), A., ii, 151.

of platinum as affected by poisons (BREDIG and IKEDA), A., ii, 441; (RAUDNITZ), A., ii, 496; (BREDIG), A., ii, 596.

**Catalysis** (EULER), A., ii, 495.

in concentrated solutions (CRAFTS), A., ii, 444.

in non-homogeneous systems (DRUCKER), A., ii, 230, 376.

of electrolytic gas by colloidal platinum (ERNST), A., ii, 495.

of hydrogen peroxide by gold (BREDIG and REINDERS), A., ii, 442.

in the reaction between hydrogen peroxide and hydriodic acid (BRÖDE), A., ii, 443.

**Chemical equilibrium** (BOUDOUARD), A., ii, 383, 646.

and reaction velocity (BANCROFT), A., ii, 88.

influence of pressure in phenomena of (BOUDOUARD), A., ii, 151.

between the different stages of oxidation of the same metal (ABEL), A., ii, 376.

at gas electrodes (BOSE), A., ii, 635.

in the system  $Bi_2O_3-N_2O_5-H_2O$  (VAN BEMMELEN and RUTTEN), A., ii, 24.

**AFFINITY, CHEMICAL:—**

**Chemical equilibrium** between ester, water, acid, and alcohol (EULER), A., ii, 307.

chemical processes in the system: ether, water and hydrogen chloride (JÜTTNER), A., ii, 595.

between ethyl alcohol and hydrochloric acid (PRICE), T., 305; P., 1900, 185.

**Hydrolysis** of acid amides (REID), A., i, 29.

of alkyl esters of fatty acids and hydrochloric acid (EULER), A., ii, 307.

of ethyl nitrate by water (V. BIRON), A., i, 111.

of glyceryl esters (HANRIOT), A., ii, 175, 324.

of salts (KULLGREN), A., ii, 149.

of salts in solution, study of, by means of electrical conductivity (SALVADORI), A., ii, 4.

of solanin (SCHULZ), A., i, 92.

**Hydrolytic dissociation**, new method for the determination of (FARMER), T., 863; P., 1901, 129.

**Partition** of ammonia between chloroform and aqueous solutions of alkali salts (DAWSON and McCRAE), T., 493; P., 1901, 5.

of ammonia between chloroform and aqueous solutions of salts of the alkaline earths (DAWSON and McCRAE), T., 1069; P., 1901, 177.

of ammonia between chloroform and water, and aqueous copper sulphate and chloroform at varying temperatures (DAWSON and McCRAE), T., 1072; P., 1901, 178.

**Velocity and equilibrium of chemical change**, lecture experiments illustrating the laws of (NOYES and BLANCHARD), A., ii, 91.

**Velocity of combination** of ketones with hydroxylamine and with phenylhydrazine (PETRENKO-KRITSCHENKO and LORDKIPANIDZÉ), A., i, 505; (PETRENKO-KRITSCHENKO and ELTSCHANINOFF), A., i, 506.

**Velocity of conversion** of hyoscyamine into atropine by means of alcoholic sodiumalkyloxides (MAZZUCHELLI), A., i, 161.

**Velocity of esterification** of stereoisomerides (MARKWALD and MCKENZIE), A., ii, 229.

**Velocity of gaseous evolutions**, measurement of (JOB), A., ii, 83.

**Velocity of hydration** of metaphosphoric acid (MONTMARTINI and EGIDI), A., ii, 551.

**AFFINITY, CHEMICAL:—**

**Velocity of hydrolysis**, dependence of, on temperature (MADSEN), A., ii, 228.

of ethyl acetate, influence of non-electrolytes on the (KULLGREN), A., ii, 496.

of methyl acetate (COPPADORO), A., ii, 544; (HENRI and BANCELS), A., ii, 647.

of stereoisomerides (MARKWALD and MCKENZIE), A., i, 229.

**Velocity of intramolecular migration** of bromoamides under the influence of an alkali (VAN DAM and ABERSON), A., ii, 88.

**Velocity of inversion** of cane sugar (V. LIPPMANN), A., ii, 89; (DUANE), A., ii, 440; (EULER), A., ii, 441.

in presence of methyl acetate (COPPADORO), A., ii, 544; (HENRI and BANCELS), A., ii, 647.

influence of the nature and intensity of light on the (GILLOT), A., i, 127.

action of invert sugar on the (HENRI), A., i, 438.

**Velocity of oxidation** of solutions of stannous chloride (YOUNG), A., ii, 390.

**Velocity of reaction** (DUANE), A., ii, 440.

and equilibrium (BANCROFT), A., ii, 88.

and solubility (BANCROFT), A., ii, 150.

general equations for, in homogeneous systems (WEGSCHEIDER), A., ii, 57.

before complete equilibrium and before the point of transition (WILDERMANN), A., ii, 544.

between chloroform and potassium hydroxide (SAUNDERS), A., ii, 13.

between ethyl alcohol and hydrochloric acid (PRICE), T., 303; P., 1900, 185.

between ferric salts, chromic acid or nitrous acid and metallic iodides (SCHÜKAREFF), A., ii, 647.

of the  $\beta$ -aromatic hydroxylamines, action of methyl on the (BAMBERGER and RISING), A., i, 529.

**Velocity of solution** of solid substances (BRUNER and TOLLOCZKO), A., ii, 10.

of arsenious oxide (DRUCKER), A., ii, 230, 376.

of chromic chloride (DRUCKER), A., ii, 230.

of iron in hydrochloric acid (CONROY), A., ii, 388.



**AFFINITY, CHEMICAL :—**

**Velocity of solution** of zinc in acids (ERICSON-AURÉN), A., ii, 451.

**Agglutination** of yeast (BARENDRECHT), A., ii, 677.

**AGRICULTURAL CHEMISTRY :—**

**ANIMALS, DAIRY PRODUCTS, FEEDING EXPERIMENTS :—**

**Bullocks**, feeding experiments on (ALBERT), A., ii, 337.

**Cattle**, maintenance of (ARMSBY), A., ii, 271.

sugar as food for (LEHMANN), A., ii, 415.

**Cows**, feeding experiments on (RAMM), A., ii, 71; (ATWATER and PHELPS; GERLACH), A., ii, 337.

feeding experiments on, with palm kernel cake, crushed palm kernels, and linseed, ricinus and earth nut meals (RAMM, MOSEN, and SCHUMACHER), A., ii, 469.

See also Butter, Milk, and Feeding Experiments.

**Dogs**, action of anæsthetics on (WRIGHT), A., ii, 180, 408.

**Horses**, metabolism in (ZUNTZ), A., ii, 177.

**Lambs**, feeding experiments on (ALBERT), A., ii, 337.

**Pigs**, feeding experiments on (GERLACH; ALBERT), A., ii, 337.

feeding experiments on, with sugar, starch, and molasses (MEISSL and BERSCH), A., ii, 668.

molasses, peat molasses, palm-kernel molasses, palm cake, and sugar as food for (KLEIN), A., ii, 416.

**Sheep**, gorse as food for (GIRARD), A., ii, 187; (VOELCKER), A., ii, 271.

**DAIRY PRODUCTS :—**

**Butter**, influence of feeding on the composition of (WEIGMANN and HENZOLD), A., ii, 187.

causes of the varying composition of (VAN RYN), A., ii, 482.

Dutch, composition of (KIRCHNER and RACINE), A., ii, 137; (REICHER), A., ii, 292; (CLARK), A., ii, 430; (RACINE), A., ii, 536.

influence of the season and feeding on the Reichert-Meissl number of (SWAVING), A., ii, 587.

digestibility of, compared with its substitutes (WIBBENS and HUIZENGA), A., ii, 253.

cryoscopic distinction between margarine and (PESCHGES), A., ii, 630.

See also Feeding Experiments. methods of analysis. See Main Index.

**AGRICULTURAL CHEMISTRY: DAIRY PRODUCTS :—**

**Cheese**, production of, by enzymes (EPSTEIN), A., ii, 119; (CHODAT and HOFMAN-BANG), A., ii, 264.

changes in the fat during the ripening of (WINDISCH), A., ii, 188.

methods of analysis. See Main Index.

**Cream**, methods of analysis. See Main Index.

**Milk**, influence of the amount of water on the yield of (KOCH), A., ii, 407.

composition of, in different stages of milking (HARDY), A., ii, 672.

factors determining the richness of (SMITH), A., ii, 338.

the "skin" of warmed (JAMISON and HERTZ), A., ii, 672.

distribution of galactase in different (BARCOCK, RUSSELL, and VIVIAN), A., ii, 406.

biology of the peptonising bacteria of (KALISCHER), A., ii, 119.

production of the fat of (VAN ENGELEN and WAUTERS), A., ii, 36.

refractive power, amount of volatile fatty acids, and the iodine number of the fat of (HOLM, KRARUP, and PETERSEN), A., ii, 291.

lecithin in (BUROW), A., ii, 30.

effect of gestation on the amount of mineral matter, especially phosphoric acid and calcium, in (KORT), A., ii, 27.

agreement between the solids of, actually determined and those found by calculation (AMBUHL), A., ii, 137.

curdling of, by rennet (DE VRIES and BOEKHOUT), A., ii, 258.

calcium and sodium citrates in the coagulation of (SABBATANI), A., ii, 175.

acidity of (VIETH and SIEGFELD), A., ii, 46.

from cows grazing on the Plateau of Sétif (MALMÉJAC), A., ii, 572.

of Indian cows and buffaloes, composition of (LEATHER), A., ii, 291.

sow's, composition of (WOLL), A., ii, 338.

effect of intravenous injection of, on the coagulability of the blood (CAMUS), A., ii, 116.

preservation of, for analysis (DUBOIS), A., ii, 429.

detection of boiled and unboiled (UTZ), A., ii, 428; (GLAGE), A., ii, 429.

See also Cows and Feeding Experiments.

# AGRICULTURAL CHEMISTRY: DAIRY PRODUCTS:—

**Milk**, methods of analysis. See Main Index.

## FEEDING EXPERIMENTS:—

**Asparagine** as a food stuff (ROSENFELD), A., ii, 177.

**Beans** as food in Serbia (ZEGA and KNEZ-MILOJKOVIĆ), A., ii, 468.  
and their mill products, composition and feeding value of (KÖHLER), A., ii, 528.

**Carob** as food for horses (DUGAST), A., ii, 683.

**Earthnut meal** as food for cows (RAMM, MOMSEN, and SCHUMACHER), A., ii, 469.

**Fish meal** as food in Germany (LEHMANN), A., ii, 469.

**Gorse**, feeding value of (GIRARD), A., ii, 187; (VOELCKER), A., ii, 271.

**Grapes**, pressed, compared with hay and straw, as food for cattle (GUERRIERT), A., ii, 683.

**Hemp cake** (LEMCKE), A., ii, 272.

**Linseed meal** as food for cows (RAMM, MOMSEN, and SCHUMACHER), A., ii, 469.

**Maize-germ molasses**, feeding value of (GERLACH; ALBERT), A., ii, 337.

**Malt germs** and dried residues of germinated barley, composition and nutritive value of (SCARAFIA), A., ii, 683.

**Molasses**, feeding experiments with (KELLNER, ZAHN, and v. GILLERN), A., ii, 469.  
as food for cows (GERLACH), A., ii, 337.  
nitrogenous compounds in (BEGER), A., ii, 272.

**Molasses, Peat molasses, and Palm-kernel molasses** as food for pigs (KLEIN), A., ii, 416.

**Molasses and Molasses-foods**, feeding value of (VELICH), A., ii, 529.

**Molasses-foods**, value of (GONNERMANN), A., ii, 71.

**Orange residues** as food in Calabria (GABRIELLI), A., ii, 71.

**Palm cake** as food for pigs (KLEIN), A., ii, 416.

**Palm kernels**, crushed and as cake, as food for cows (RAMM, MOMSEN, and SCHUMACHER), A., ii, 469.

**Peas**, and their mill products, composition and feeding value of (KÖHLER), A., ii, 528.

**Peat meal**, feeding experiments with (KELLNER, ZAHN, and v. GILLERN), A., ii, 469.

# AGRICULTURAL CHEMISTRY: FEEDING EXPERIMENTS:—

**Ricinus meal** as food for cows (RAMM, MOMSEN, and SCHUMACHER), A., ii, 469.

**Seaweed** as food (SOLLEID), A., ii, 529.

**Sugar** as food for cattle (LEHMANN), A., ii, 415.

as food for pigs (KLEIN), A., ii, 416.

**Vetches**, and their mill products, composition and feeding value of (KÖHLER), A., ii, 528.

## PLANTS.

## PLANT COMPOSITION AND METABOLISM:—

**Plants**, effect of osmotic pressure on the form and structure of (BEAUVÉRIE), A., ii, 183.

influence of distance on the growth and composition of (v. SEELHORST and PANAOTOVIC), A., ii, 330.

photosynthesis and the coloration of (GRIFFON), A., ii, 331.

gaseous exchanges between the atmosphere and (SCHLÆSING), A., ii, 31.

absorption of atmospheric methane by (URBAIN), A., ii, 273.

annual migration of nitrogenous and ternary substances in (ANDRÉ), A., ii, 413.

mechanism of esterification in (CHARABOT and HÉBERT), A., ii, 619.

distribution of acidity in flowers, leaves and stems of (ASTRUC), A., ii, 677.

estimation of the acidity in (BERTHELOT), A., ii, 677.

formation of asparagine in (SCHULZE), A., ii, 184, 332, 467.

presence and amount of copper in (HECKEL), A., ii, 331.

hydrocyanic acid in (SOAVE), A., ii, 332.

occurrence of organic iron compounds in (SUZUKI), A., ii, 678.

formation of proteids in (ZALESKI), A., ii, 619.

conditions of the production of proteids in (MAYER), A., ii, 526.

production of proteids in, in absence of light (IWANOFF; SCHULZE), A., ii, 184.

influence of carbohydrates on the production of proteids in (SCHULZE), A., ii, 333.

reproduction of proteids in, from the products of their decomposition (SCHULZE), A., ii, 184.

## AGRICULTURAL CHEMISTRY: PLANTS:—

- Plants**, genesis of terpenoid compounds in (CHARABOT), A., ii, 34.  
 *rôle*  of the chlorophylllic function in the genesis of terpenic constituents in (CHARABOT), A., ii, 183.  
 zinc in (FRICKE), A., ii, 34; (LABAND), A., ii, 467.  
 action of hydrogen cyanide on (JOHNSON), A., ii, 334.  
 action of ether on (FISCHER), A., ii, 335.  
 etiolated, development of, after exposure to light (RICOME), A., ii, 120.

## PLANTS:—

- Ash**, loss of sulphur in preparing (FRAPS), A., ii, 421.  
**Buds**, chemical changes during the evolution of (ANDRÉ), A., ii, 120.  
**Cell walls**, fixation of metals by (DEVAUX), A., ii, 571.  
**Chlorophyll** (NENCKI and MARCHLEWSKI), A., i, 554.  
 use of photobacteria to show the functioning of (BEYERINCK), A., ii, 523.  
 yellow colouring matters accompanying, and their spectroscopic relations (SCHUNCK), A., i, 734.  
**Chlorophyllous assimilation** without living organisms (FRIEDEL), A., ii, 411.  
 influence of pressure on (FRIEDEL), A., ii, 267.  
**Leaves**, green, aldehyde in (REINKE and BRAUNMÜLLER), A., ii, 332.  
 nitrogenous constituents of (WINTERSTEIN), A., ii, 619.  
 winter, carbohydrate metabolism in (CZAPEK), A., ii, 571.  
**Pollen** of sugar beet, chemical composition of (STIFT), A., ii, 412.  
**Root nodules**, effect of inoculating material on the production of (NOBBE and HILTNER), A., ii, 187.  
**Roots**, investigation on (MÜLLER-THURGAU), A., ii, 525.  
**Sap** of the vanilla plant from the Congo (HÉBERT), A., ii, 34.  
**Seedlings**, exosmosis of diastase by (LAURENT), A., ii, 69.  
**Seeds**, quiescent, respiration of (KOLKWITZ), A., ii, 570.  
 production of alcohol during the intramolecular respiration of, in water (GODLEWSKI and POLZENIUSZ), A., ii, 618.  
 microchemical examination of aleurone-grains of (TSCHIRCH and KRITZLER), A., ii, 33.

## AGRICULTURAL CHEMISTRY: PLANTS:—

- Seeds**, diffusion of enzymes in (LUMIA), A., ii, 33.  
 germinated, proteolytic ferment in (BUTKEWITSCH), A., ii, 182, 466.  
 non-germinating, presence of seminase in (BOURQUELOT and HÉRISSEY), A., ii, 69.  
 behaviour of the pentosans of, during germination (SCHÖNE and TOLLENS), A., ii, 267.  
 proteids of (BOKORNY), A., ii, 415.  
**Respiration** of quiescent seeds (KOLKWITZ), A., ii, 570.  
 influence of anaesthetics on (MORROWIN), A., ii, 331.  
**Plant growth**, toxic action of various metallic salts on (DEHÉRAIN and DEMOUSSY), A., ii, 266; (COUPIN), A., ii, 335.  
 toxic action of ammonium, potassium and sodium compounds on (COUPIN), A., ii, 122.  
 action of potassium salts on (COUPIN), A., ii, 525.  
 damage done to, by mercury (DAFERT), A., ii, 269; (COUPIN), A., ii, 335.  
 toxic value of mercuric chloride and its double salts in (CLARK), A., ii, 526.  
**Germination**,  *rôle*  of oxygen in (MAZÉ), A., ii, 33.  
 evolution of phosphorus and sulphur during the commencement of (ANDRÉ), A., ii, 525.  
 in distilled water (DEHÉRAIN and DEMOUSSY), A., ii, 266.  
 of seeds as affected by certain chemical manures (HICKS), A., ii, 330.  
 of seeds, chemical changes in the (SHULOFF), A., ii, 330.  
 effect of copper sulphate on (DEHÉRAIN and DEMOUSSY), A., ii, 266; (COUPIN), A., ii, 335; (DEMOUSSY), A., ii, 570.  
 action of formaldehyde on (WINDISCH), A., ii, 466.  
 influence of temperature on the energy of the decomposition of proteid in (PRIANISCHNIKOFF), A., ii, 120.

## PLANTS:—

- Apples**, chemical changes in, during ripening (ORTO), A., ii, 678.  
**Barley**, cultivation of (PAGNOUL), A., ii, 123.  
 pot experiments on (VOELCKER), A., ii, 270.  
 manuring experiments with organic nitrogen compounds on (THOMSON), A., ii, 620.

## AGRICULTURAL CHEMISTRY: PLANTS:—

- Barley**, influence of potassium salts on the development of (STOKLASA and PITRA), A., ii, 621.  
 influence of manure and the amount of water in the soil on the growth and composition of (v. SEELHORST and GEORGS), A., ii, 274.  
 brewing, production of, with low percentage of nitrogen on light soils (REMY), A., ii, 186.  
 Norwegian, analyses of (WERENSKIÖLD), A., ii, 336.
- Beetroot** (sugar), nutrition of (STOKLASA), A., ii, 528.  
 in alkali soil (MYERS), A., ii, 468.  
 manuring experiments on, with potassium salts (SCHULZE), A., ii, 621.  
 methods of analysis. See Main Index.
- Buckwheat**, gaseous exchanges between the atmosphere and (SCHLÆSING), A., ii, 31.  
 chlorine requirements of (MAYER), A., ii, 416.
- Carob** (*Ceratonia Siliqua*), composition of (DUGAST), A., ii, 683.
- Carrots**, *Bacillus carotovorus* the cause of the rotting of (JONES), A., ii, 264.
- Clover**, influence of the amount of water in the soil, and the manure, on the yield and composition of (v. SEELHORST, GEORGS, and FAHRENHOLTZ), A., ii, 682.
- Cocoanut**, composition of the, during germination (KIRKWOOD and GIES), A., ii, 267.
- Colchicum**, physiological significance of colchicine in different (ALBO), A., ii, 679.
- Conifer seeds**, composition of some (SCHULZE), A., ii, 467.
- Crops**, action of sodium bromide and iodide, and lithium chloride on (VOELCKER), A., ii, 269.
- Gorse**, cultivation of (GIRARD), A., ii, 187; (GUÉPIN), A., ii, 271.  
 utilisation of (GIRARD), A., ii, 187.  
 as food for sheep (GIRARD), A., ii, 187; (VOELCKER), A., ii, 271.
- Grasses**, composition of, from different meadows (EMMERLING, WEBER, BACHÉ, and HILBERT), A., ii, 186.
- Hay**, examination of, to ascertain the changes in the amounts of food constituents, phosphoric acid, and potash, caused by different manuring (SCHULZE), A., ii, 682.

## AGRICULTURAL CHEMISTRY: PLANTS:—

- Hibiscus esculentus*, composition of the fruit of (ZEGA), A., ii, 70.
- Hops**, autumnal return of substances in (FRUWIRTH), A., ii, 185.  
 bitter principles of (BARTH), A., i, 40.  
 manurial experiments on (REMY), A., ii, 35; (BARTH), A., ii, 72.
- Ivy** as a calcareous plant (v. KLENZE), A., ii, 185.
- Leguminosæ**, cultivation of (MALPEAUX), A., ii, 270.  
 effect of inoculating material on the yield of (NOBBE and HILTNER), A., ii, 187.
- Lime trees**, constituents of the bark of (BRAUTIGAM), A., i, 93.
- Lupinus albus*, migration of nitrogenous and ternary substances in (ANDRÉ), A., ii, 413.  
 nitrogenous constituents of the seeds and seedlings of (WASSILIEFF), A., ii, 185.
- Maize**, assimilation in (v. SIGMOND), A., ii, 70.
- Mangel-wurzels**, chemical study of (GERBIDON), A., ii, 337.  
 experiments with English, French, and German (WOHLTMANN), A., ii, 573.
- Merendera**, physiological significance of colchicine in different (ALBO), A., ii, 679.
- Nasturtiums**, gaseous exchanges between the atmosphere and (SCHLÆSING), A., ii, 31.
- Oats**, variation in the amount of nutritive substances in (ATTERBERG), A., ii, 573.  
 alinit experiments with (SCHULZE), A., ii, 527.  
 manuring experiments with organic nitrogen compounds on (THOMSON), A., ii, 620.
- Olives**, cultivation and composition of (BRACCI), A., ii, 35.
- Peas**, nitrogen in (JOHANNSEN), A., ii, 35.
- Pine trees**, injury to, by smoke (SORAUER and RAMANN), A., ii, 36.
- Potato ash**, effect of water and manure on the composition of (v. DASZEWSKI), A., ii, 72.
- Potatoes**, formation of solanine in, by Bacteria (WEIL), A., ii, 266.  
 green manure experiments on (CLAUSEN), A., ii, 72.
- Rye grain**, composition of, at different stages of ripeness (NEDOKUCHAEFF), A., ii, 331.

## AGRICULTURAL CHEMISTRY: PLANTS:—

**Rye grass**, Italian, influence of the amount of water in the soil, and the manure, on the yield and composition of (v. SEELHORST, GEORGS, and FAHRENHOLTZ), A., ii, 682.

**Serradella**, manurial experiments with calcium carbonate on (SCHULZE), A., ii, 528.

*Sinapis alba*, migration of nitrogenous and ternary substances in (ANDRÉ), A., ii, 413.

**Sunflower plant** (WILEY), A., ii, 336.

**Swedes**, estimation of sugar in (COLLINS), A., ii, 583.

**Tea plant**, amount of theine in different parts of the (SUZUKI), A., ii, 679.

**Tobacco plant**, assimilation in the (v. SIGMOND), A., ii, 70.

*Trapa natans*, composition of (ZEGA and KNEZ-MILOJKOVIĆ), A., ii, 269.

**Vanilla plant** from the Congo, sap of (HÉBERT), A., ii, 34.

**Vegetable life**, physiological function of enzymes in (SOAVE), A., ii, 267.

**Vegetables**, composition and nutritive value of (BALLAND), A., ii, 572.  
quantity of pentosans in (WITTMANN), A., ii, 414.

**Vine culture** (OLIVERI and ROMANO), A., ii, 527.

**Vine leaves**, soluble constituents of (BÖTTINGER), A., ii, 269.

*Voandzeia subterranea*, composition of (BALLAND), A., ii, 415.

**Water chestnut**, composition of (ZEGA and KNEZ-MILOJKOVIĆ), A., ii, 269.

**Wheat**, cultivation of (GIGLIOLI; OLIVERI and ROMANO), A., ii, 527.  
pot experiments on (VOELCKER), A., ii, 270.

variation in the amounts of gluten in (VIGNON and COUTOURIER), A., ii, 335.

**Wheat grain**, relation between the weight and the percentage of nitrogen in (JOHANNSEN and WEIS), A., ii, 72.  
SOILS.

**Soil-sampling**, method of (HAZARD), A., ii, 282.

**Soils**, chemical examination of (BERJU), A., ii, 193.

humidity of, and denitrification (GIUSTINIANI), A., ii, 569.

albumin-forming bacteria in (GERLACH and VOGEL), A., ii, 675.

calcium compounds in (MEYER), A., ii, 273.

hydrolysis and decomposition of fats and fatty acids in the (RUBNER), A., ii, 273.

## AGRICULTURAL CHEMISTRY: SOILS:—

**Soils**, movement of water and solutions of salts in (KRAWKOW), A., ii, 73.

manurial requirements of typical (GERLACH), A., ii, 417.

testing of, as regards their manurial requirements (SCHULZE), A., ii, 681.

arable, absorption of calcium phosphate by (DUMONT), A., ii, 274.

alkali, of the Yellowstone Valley (WHITNEY and MEANS), A., ii, 73.

banana, of Jamaica (COUSINS), A., ii, 681.

calcareous, valuation of materials for improving (IMMENDORFF), A., ii, 130.

cultivated, soluble salts of (KING and JEFFREY), A., ii, 338.

mineral, free humic acids in (IMMENDORFF), A., ii, 620.

from German East Africa, analysis of (STUTZER), A., ii, 283.

Groningen, effect of manures on (DE VRIES), A., ii, 684.

from Madagascar, agricultural value of (MÜNTZ and ROUSSEAUX), A., ii, 273.

condition of aluminium in (SCHLESING), A., ii, 471.

from the sea-bed of the Red Sea (NATTERER), A., ii, 173.

of the Province Rheinhesen in the Rheingau and Taunus (LUEDECKE), A., ii, 417.

of the experimental field of the Royal University of Bremen at Rosenthal (v. RUMKER and HOFFMANN), A., ii, 418.

wheat, of Broadbalk, Rothamsted, chemical study of the phosphoric acid and potash contents of the (DYER), A., ii, 339.

methods of analysis. See Main Index.

**Humus**, absorption of calcium phosphate by (DUMONT), A., ii, 274.

methods of analysis. See Main Index.

**Peat**, constituents of (PETERMANN), A., ii, 36.

NITRIFICATION, NITROGEN, AND NITROGENOUS COMPOUNDS:—

**Nitrification** and denitrification (BEDDIES), A., ii, 569.

rate of, of some fertilisers (WITHERS), A., ii, 523.

of humus (RIMBACH), A., ii, 37.

**Nitrates**, cause and importance of decomposition of, in soil (KRUGER and SCHNEIDEWIND), A., ii, 470.

## AGRICULTURAL CHEMISTRY: SOILS:—

**Nitrates**, reduction of, in presence of farmyard manure (STREET), A., ii, 329.

**Nitrogen**, free atmospheric, assimilation of, by Mycelia (HILFNER), A., ii, 32.

and phosphoric acid, assimilation of, at three periods of growth (BIELER and ASÖ), A., ii, 682.

in horn-meal, value of, as compared with nitric nitrogen (GERLACH), A., ii, 574.

in soil, effect of various carbonaceous compounds on the amount of (GERLACH), A., ii, 574.

**Mycelia**, assimilation of free atmospheric nitrogen by (HILFNER), A., ii, 32.

**Denitrification**, processes of (LEMMERMANN), A., ii, 524; (BEDDIES), A., ii, 569.

in soil (AMPOLA and ULIANI), A., ii, 524.

effect of moisture on (GIUSTINIANI), A., ii, 569.

of farmyard manure (PFEIFFER and LEMMERMAN), A., ii, 37.

**Denitrifying organisms** and their action in the soil (KRENZ and GERLACH), A., ii, 410.

behaviour of, in culture solutions (STUTZER), A., ii, 264.

## WATER.

**Drainage water** and salt swamps of the Odessa irrigation fields (SELIWANOFF), A., ii, 530.

Lysimeter experiments in 1899 (HANAMANN), A., ii, 276.

## MANURES AND MANURING EXPERIMENTS:—

**Manures**, economy in the application of (POMORSKI), A., ii, 123.

artificial, effect of, on humus (DEVRIES), A., ii, 684.

effect of, on the germination of seeds (HICKS), A., ii, 330.

methods of analysis. See Main Index.

**Alinit**, inoculation of the soil with (MALPEAUX), A., ii, 417.

**Ammonium sulphate**, manual experiments with (KRAUS), A., ii, 340.

**Bone meal**, manual effect of (DAFERT and REITMAIR; DAFERT; KELLNER and BÖTTCHER), A., ii, 275.

methods of analysis. See Main Index.

**Calcium carbonate** as a manure (SCHULZE), A., ii, 528.

**Calcium phosphate**, absorption of, by arable soil and humus (DUMONT), A., ii, 274.

## AGRICULTURAL CHEMISTRY: MANURES:—

**Cow urine and dung**, losses of nitrogen in fresh, kept in thin layers, alone, and with straw (KRENZ and GERLACH), A., ii, 418.

**Farmyard manure**, preservation of (WAGNER), A., ii, 530.

action and denitrification of (PFEIFFER and LEMMERMAN), A., ii, 37.

fermentation of nitrogenous substances in (DEHÉRAIN and DUPONT), A., ii, 684.

**Green manure** (ENGELHARDT), A., ii, 276.

**Guano** from Erythrea (AMPOLA), A., ii, 341.

**"v. Krottnaurer's patent manure,"** manual value of (BÖTTCHER), A., ii, 471.

**"Leipzig poudrette,"** manual value of (BÖTTCHER), A., ii, 471.

**Locusts** as manure (HÜNCKEL D'HERCULAI), A., ii, 342.

**"Martellin"** as a manure (WOHLTMANN), A., ii, 573.

**Nitrogenous manures**, experiments with (SCHULZE), A., ii, 620.

**Nitrogenous materials** as manures (VOORHEES), A., ii, 341.

**Phosphate**, Algerian, manuring experiments with (DAFERT), A., ii, 620.

**Phosphoric acid**, effect of different forms of (DAFERT and REITMAIR), A., ii, 275.

in soils (SCHLÆSING), A., ii, 470.

in bone meal, the citric acid solubility of (METHNER), A., ii, 278.

from various sources, box experiments with (MERRILL), A., ii, 341.

**Potassium nitrate**, effectiveness of, as compared with a combination of potassium chloride and sodium nitrate (WHEELER and TILLINGHAST), A., ii, 340.

**Potassium salts**, manual experiments with (SCHULZE), A., ii, 621.

influence of, on the development of barley (STOKLASA and PITRA), A., ii, 621.

**Slag, basic.** See Main Index.

**Sodium nitrate**, use of, containing perchlorate (VOELCKER), A., ii, 270.

free iodine in (DAFERT and HALLA), A., ii, 621.

manual experiments with (KRAUS), A., ii, 340.

**Stable manure**, use of pepsin solution for investigating (PFEIFFER and LEMMERMAN), A., ii, 189.

albumin-forming bacteria in (GERLACH and VOGEL), A., ii, 675.

- AGRICULTURAL CHEMISTRY: MANURES:—**  
**Superphosphate**, basic, its preparation and use as a manure (HUGHES), A., ii, 471.  
**Manuring experiments** (SEBELIEN), A., ii, 468.  
 in 1899 (HANAMANN), A., ii, 528.  
 on cultivated plants (GODLEWSKI), A., ii, 573.  
 at Jersitz-Posen in 1898-1899 and 1899-1900 (GERLACH), A., ii, 416.  
 with excrement (KRENN and GERLACH), A., ii, 621.
- Air**. See Atmospheric air.
- Akee**, oil of (GARSED), A., ii, 136.
- Alanine**, derivatives of (FISCHER), A., i, 192; (FISCHER and FOURNEAU), A., i, 675.
- iso***Alantolactone** and its hydrochlorides and nitro-derivative, and *iso***Alantolic acid** and its salts, ethyl ester, amide and acetyl derivative (SPRINZ), A., i, 325, 387.
- Albite** from Amelia, Virginia (ERBEN and CEIPEK), A., ii, 169.  
 in green schist from Piedmont (PREISWERK), A., ii, 560.  
 from the Tatra mountains (GORAZDOWSKI), A., ii, 170.
- Albumen** of the seeds of *Phoenix canariensis*, composition of, and the chemical changes accompanying their germination (BOURQUELOT and HÉRISSEY), A., ii, 619.
- Albumin**, decomposition of (DENNSTEDT), A., i, 780.  
 oxidation of (SCHULZ), A., i, 780.  
 products of the digestion of (FRANKEL and LANGSTEIN), A., i, 575.  
 formation of acetone from (BLUMENTHAL and NEUBERG), A., i, 433.  
 transformation of, into globulin (STARKE), A., i, 242.  
 formation of an isatin derivative from (GNEZDA), A., i, 780.  
 methyl mercaptan from (NENCKI), A., i, 242.  
 peptones from (PAAL), A., i, 623.  
 precipitation of, in urine, by clarifying agents (GRÜTZNER), A., ii, 295.  
 detection of, in urine (PRAUM; ROCH), A., ii, 710.
- Albumin, egg-**, hydrolysis of (FISCHER), A., i, 745.  
 coagulation of (GUÉRIN), A., ii, 211.  
 crystallised, glucosamine from (LANGSTEIN), A., i, 108.  
 formation of urea by the oxidation of, with ammonium persulphate (HUGOUNENQ), A., i, 491.
- Albumins** in dropsical pus (MALMÉJAC), A., ii, 566.
- Albumins**, albumoses, peptones, and syntonins of muscular tissue, differentiation between (BILTÉRYST), A., ii, 632.
- Albuminoids**. See Proteids.
- Albuminuria**, physiological relations of intermittent (CHARRIN), A., ii, 181.
- Albumose**, an, in urine (MILROY), A., ii, 68.
- Albumoses**, chemistry of (HAYASHI), A., i, 354.  
 albumins, peptones, and syntonins of muscular tissue, differentiation between (BILTÉRYST), A., ii, 632.
- Deuteroalbumose** and **Heteroalbumose**, hexon bases in (HASLAM), A., i, 492.
- Alcapton urine**, benzoxylation of (ORTON and GARROD), A., ii, 614.
- Alcohol**. See Ethyl alcohol.
- Alcohol**,  $C_8H_{12}O_2$ , from the reduction of methylacetylacetone (ZELINSKY and ZELIKOFF), A., i, 657.  
 $C_8H_{16}O_2$ , and its diacetyl derivative, from the reduction of the aldol,  $C_8H_{14}O_2$  (PLATTENSTEINER), A., i, 255.  
 $C_{10}H_{14}O_2$ , and its diacetyl derivative, from the reduction of the aldol,  $C_{10}H_{12}O_2$  (HACKHOFFER), A., i, 278.  
 $C_{10}H_{22}O_5$ , and its penta-acetyl derivative, from propyldiallylcarbinol (MARKO), A., i, 251.  
 $C_{11}H_{18}O_2$ , from the action of zinc dust and acetic acid on carbophenachone (WALLACH and v. WESTPHALEN), A., i, 332.  
 $C_{11}H_{22}O$ , from ethyl malonate and magnesium ethiodide (VALEUR), A., i, 317.  
 $C_{13}H_{26}O$ , from the hydrolysis of the wax  $C_{37}H_{74}O_2$  (GRESHOFF and SACK), A., i, 445.  
 $C_{15}H_{26}O$ , from amyrol (v. SODEN and ROJAHN), A., i, 159.
- Alcohol bases** (HENRY), A., i, 16, 68; (STRAUSS), A., i, 17; (MATTHES), A., i, 259, 513.
- Alcohols**, synthesis of, by means of organo-magnesium compounds (BÉHAL), A., i, 246; (MASSON), A., i, 249; (GRIGNARD), A., i, 250, 263, 393, 679; (TISSIER and GRIGNARD), A., i, 316, 440; (VALEUR), A., i, 317.  
 new method for the synthesis of (GUERBET), A., i, 182, 307.  
 action of, on acetals of monohydric alcohols (DELÉPINE), A., i, 365.  
 influence of light on the interaction of, with aldehydes and ketones (CIAMICIAN and SILBER), A., i, 329.

**Alcohols**, action of, on chloral (GABUTTI), A., i, 367.  
 action of, on cobalt and iron salts (DITZ), A., ii, 222.  
 action of nitric acid on (KONOWALOFF), A., i, 249.  
 action of, on the arterial blood stream (BUCHNER, FUCHS, and MEGELE), A., ii, 562.  
 etherification of, by inorganic salts (ODDO), A., i, 495.  
 chlorocarbonates of (FARBENFABRIKEN VORM. F. BAYER & CO.), A., i, 662, 663, 697.  
 compounds of, with complex acids (v. BAEYER and VILLIGER), A., i, 659.  
**Alcohols, aromatic**, synthesis of, by means of formaldehyde (STOERMER and BEHN), A., i, 726.  
**Alcohols, fatty**, and calcium carbide (LEFEBVRE), A., i, 441.  
 compounds of, with aluminium chloride (PERRIER and POUGET), A., i, 442.  
**Alcohols, primary**, synthesis of (MOUREU and DESMOTS), A., i, 442.  
 oxidation of, by contact-action (TRILLAT), A., i, 441.  
**Alcohols, secondary**, action of nitric acid on (PONZIO), A., i, 577.  
 carbamates of (FARBENFABRIKEN VORM. F. BAYER & CO.), A., i, 662, 663.  
**Alcohols, secondary and tertiary**, oxidation of, by contact-action (TRILLAT), A., i, 496.  
**Alcohols, tertiary cyclic**, synthesis by means of magnesium alkyl haloids (ZELINSKY), A., i, 660.  
**Alcohols and Phenols**. See also :—  
 Acetophenonepinacone.  
 5-Acetyl-amino-2-naphthol.  
 2-Acetylaminophenol.  
 Acetylcarbinol.  
 4-Acetylcatechol.  
 Acetylmethylcarbinol.  
 Acetylmethylenechlorohydrin.  
 4-Acetylpyrogallol.  
*m*-Alkylaminophenols.  
 Allyl alcohol.  
 Allylphenols.  
 Amyl alcohols.  
 Amyrol.  
 Anhydro-*p*-ethoxyaminobenzylalcohol.  
 Apioedextrosephloroglucinol.  
 Benzaurin.  
 Benzeneazo-*o*-bromo-*p*-cresol.  
 Benzeneazo-*p*-cresol.  
 Benzeneazo- $\beta$ -naphthol.  
 Benzene-4-azoresorcinol.  
 Benzhydrols.

**Alcohols and Phenols**. See :—  
 Benzopinacone.  
 1:4-Benzopyranols.  
 $\delta$ -Benzoyl- $\alpha\beta$ -butanediol.  
 Benzoyleresols.  
 Benzyl alcohol.  
 Benzylcarbinol.  
 Benzylcarvacrol.  
 Benzyl-*m*-cresol.  
 Benzyl-dimethylcarbinol.  
*m*-Benzylethylaminophenol.  
 Benzylideneamylamine- $\beta$ -naphthol.  
 Benzylideneanilinaphthols.  
 Benzylidenebenzylamine- $\beta$ -naphthol.  
 Benzylidene- $\beta$ -naphthol.  
 Benzylidene- $\beta$ -naphthylamine- $\beta$ -naphthol.  
 Benzylidenephenylhydrazinenaphthols.  
 Betitol.  
 $\alpha\delta$ -Butanediol (*tetramethylene glycol*).  
 Butanol.  
 Butyl alcohols.  
*iso*Butylene-chlorohydrins.  
 Butylene glycol.  
 Campherol.  
 Carvacrol.  
 Catechol.  
*iso*Chavibetol.  
 $\alpha$ -Chlorohydrin.  
 Cærulein.  
 Cresols.  
 Dehydrothymol.  
 Diacetyl-*o*-aminophenol.  
 Diisoamylcarbinol.  
 Dianisyl-disazo- $\alpha$ -naphthol.  
 Diisobutylcarbinol.  
 Diethylamylcarbinol.  
 Diethylisobutylcarbinol.  
 Diethyloctylcarbinol.  
 $\beta$ -Diheptyl alcohol.  
 Dihydroxyanhydro-2:4-dimethyl-1:4-benzopyranols.  
 2:8-Dihydroxy-3:7-dimethylacridine.  
 $\alpha\gamma$ -Dihydroxy- $\beta\delta$ -dimethylpropane.  
 2:2'-Dihydroxydiphenyl.  
 Dihydroxyfluorescein.  
 1:5-Dihydroxy-3-methoxyxylene.  
 2:3-Dihydroxycyclopentane.  
 Dihydroxypentanthrene.  
 Dihydroxy-2-phenylanhydro-4-methyl-1:4-benzopyranols.  
 2:6-Dihydroxypyridine.  
 2:4-Dihydroxyquinoline.  
 4:4'-Dihydroxytetraphenylmethane.  
 Dihydroxytriphenylmethane.  
 2:5-Dihydroxy-1:3-xylene.  
 Dimethylallylcarbinol.  
 4-Dimethylaminocycloheptanol.  
 Dimethylamylcarbinol.  
 Dimethylisoamylcarbinol.  
 $\beta\zeta$ -Dimethyl- $\beta$ -decene- $\theta$ -ol.



**Alcohols and Phenols. See :—**

Dimethylethylcarbinol.  
 1:3-Dimethyl*cyclo*hexanol-3.  
 Dimethylhexylcarbinol.  
 2:4-Dimethylimino- $\psi$ -quinol.  
 $\beta\beta$ -Dimethylol- $\gamma$ -pentanol.  
 $\alpha\alpha$ -Dimethylolpropaldehyde.  
 Dimethyl*cyclo*propylcarbinol.  
 1:3-Dimethyl-4-*isopropylcyclo*-hexanol-3.  
 2:4-Dimethyl- $\psi$ -quinol.  
 Dinaphthylene alcohol.  
 Dinaphthylene glycol.  
 Dioctyl alcohol.  
 Diosphenol.  
 Diphenol.  
 1:2-Diphenyl-1:2-dihydroxycyclopentane.  
 $\alpha\epsilon$ -Diphenyl- $\alpha\epsilon$ -dihydroxypentane.  
 Diphenylidazo- $\alpha$ -naphthol.  
 1:3-Diphenyl-2-methyltrimethylene glycol.  
 Erythritols.  
 Estragol.  
 Ethanoldi*iso*amylamine.  
 Ethanoldi*isobutyl*amine.  
 Ethanoldipropylamine.  
 $\alpha$ -*p*-Ethoxyphenyl- $\beta\beta$ -dimethyl- $\alpha\gamma$ -propanediol.  
*o*-Ethoxyphenylethyl alcohol.  
 Ethyl alcohol.  
*m*-Ethylaminophenol.  
 Ethylene ethyl alcohol.  
 Ethylene glycol.  
*p*-Ethylphenol.  
 Ethyl-*p*-quinol.  
 Eugenol.  
*iso*Eugenol.  
 Eupittone-black.  
 Ficocerylic alcohol.  
 Fluorene alcohol.  
 Fluorescein.  
 2-Furfuryl*iso*amylcarbinol.  
 Gallein.  
 Glycerol.  
 Glycol,  $C_{10}H_{22}O_2$ .  
 Glycolliminohydrin.  
 Glycols.  
 Guaiacol.  
 Harmalol.  
 Heptyl alcohol.  
 Heptylene glycol.  
 Hexahydroxydiphenyl.  
*cyclo*Hexanepinacone.  
 $\alpha\beta\epsilon$ -Hexanetriol.  
*cyclo*Hexanol.  
 7-Hydroxyanthro-2:4-dimethyl-1:4-benzopyranol.  
 Hydroxyazobenzene.  
*o*-Hydroxybenzeneazo-*p*-toluene.  
 4-Hydroxybenzyl alcohol.  
 Hydroxybenzylideneindene.

**Alcohols and Phenols. See :—**

Hydroxycamphene.  
 Hydroxydimethylcoumarin.  
 7-Hydroxy-2:4-diphenylbenzodihydropyran.  
 7-Hydroxy-2:4-diphenyl-1:4-benzopyranol.  
 $\beta$ -Hydroxydiphenylethane.  
 2-Hydroxy-7-ethoxy-3-*o*-hydroxyphenylquinoxaline.  
 2-Hydroxyfluorene.  
 Hydroxyhydrindene.  
 2-Hydroxy-3-*o*-hydroxyphenylquinoxaline.  
 2-Hydroxy-5-methylolbenzaldehyde.  
 1-Hydroxy-3-methoxycarbonyl-4-aminoxylene.  
 3-Hydroxymethylpyridine.  
 7-Hydroxy-2-phenylanhydro-4-methyl-1-4-benzopyranol.  
*o*-Hydroxyphenylethyl alcohol.  
 5- $\beta$ -Hydroxy- $\beta$ -phenylethyl-2-ethylpyridine.  
 $\beta$ -Hydroxy- $\beta$ -phenyl-2-ethylpyridine.  
 7-Hydroxy-2-phenyl-4-methylbenzopyran.  
 6-Hydroxy-3-phenyl- $\psi$ -phenanthroline.  
 6-Hydroxy-2-picoline.  
 $\alpha$ -Hydroxy- $\alpha$ -propoxy- $\beta\beta\beta$ -trichloroethanes.  
 2-Hydroxy- $\beta$ -*p*-isopropylphenylethylpyridine.  
 Hydroxyquinol.  
 Hydroxyquinolines.  
 Hydroxyquinolphthalein.  
 4-Hydroxy-*o*-quinone.  
 Hydroxytetramethylpiperidines.  
*p*-Hydroxytriphenylcarbinol.  
 Indophenols.  
 Indoxyl.  
 Leuco-eupittone.  
 Licareol.  
 Limonenol.  
 Maltol.  
 Mannitol.  
 Menthols.  
*o*-Mercuridiphenol.  
 Mesityl- $\psi$ -quinol.  
 1-Methanal-2-naphthylol.  
 3-Methoxy-2:6-dimethylphenetriol.  
 Methylacetylcarbinol.  
 Methyl alcohol.  
 Methyl*diamino*cresol.  
 Methyl- $\alpha$ -aminoethylcarbinol.  
*m*-Methylaminophenol.  
 $\beta$ -Methylanthranol.  
 Methylborneol.  
 Methylbutylallylcarbinols.  
 4-Methyldaphnetin.  
 Methyl*diiso*amylcarbinol.  
 1-Methyl-3-ethyl*cyclo*hexanol-3.

**Alcohols and Phenols.** See :—

Methylfenchyl alcohol.  
 Methylgranatonine pinacone.  
 1-Methylcyclohexanol-1.  
 Methylhexene- $\beta$ - and - $\epsilon$ -ols.  
 Methylhexylcarbinol.  
 Methylisopropylallylcarbinol.  
 1-Methyl-3-*n*- and -*iso*-propylcyclohexanols-1.  
 Methyl- $\alpha\beta$ -cyclotrimethylene-daphnetin.  
 Methyl- $\alpha\beta$ -cyclotrimethyleneumbelliferone.  
 4-Methylumbelliferone.  
 Morphenol.  
 Myrcenol.  
 $\alpha$ -Naphthaleneazo-*o*-cresol.  
 $\alpha$ -Naphthaleneazophenol.  
 $\alpha$ -Naphthaleneazothymol.  
 1:4-Naphthaquinol-2-tetramethyldiaminodiphenylmethane.  
 $\beta$ -Naphthol- $\beta$ -azophenylbenzimidazoles.  
 Naphthols.  
 $\alpha$ -Naphthyl dimethylcarbinol.  
 Naphthylolnaphthylloxynaphthylmethane.  
 $\beta$ -Octinyl alcohol.  
 Octyl alcohols.  
 Orcinol.  
 Papaverinol.  
 $\beta$ -Pentene- $\delta$ -ol.  
 Phenol.  
 Phenols.  
 Phenylisomylcarbinol.  
 Phenylisobutylcarbinol.  
 Phenyl dimethylcarbinol.  
 Phenyl di- $\beta$ -naphtholmethane.  
 Phenylethyl alcohol.  
 2-Phenyl-6:0-hydroxystilbazole.  
 Phenylmethylallylcarbinol.  
 Phenylpropargyl alcohol.  
 Phenylpropylcarbinols.  
 Picric acid.  
 Pinacone  $C_{18}H_{30}O_2$ .  
 Pinoresinol.  
 Propanol.  
 Propenylphenols.  
 Propionylcarbinol.  
*n*-Propyl alcohol.  
*iso*Propyl alcohol.  
 Propyldiallylcarbinol.  
 Propylene glycol.  
 Psyllostearyl alcohol.  
 Quinitol.  
 Quinol.  
 Quinols.  
 $\psi$ -Quinols.  
 Resorcinol.  
 Rhododendrol.  
 Salol.  
 Terpeneols.

**Alcohols and Phenols.** See :—

Tetramethyldiaminophenyl-anthranol and -oxanthranol.  
 Tetramethylenecarbinol.  
 Tetramethylene glycol.  
 1:2-cycloTetramethylenumbelliferone.  
 Tetraphenylcyclopentenol.  
 Tetrazolol.  
 Thymol.  
 Thymoquinol.  
 Tolueneazodibromophenols.  
 Tolueneazo- $\beta$ -naphthols.  
 Tolueneazo-*o*-nitrophenols.  
 Tolueneazophenols.  
*p*-Toluquinol.  
*p*-Tolylsulphonocarbinol.  
 Triacetonealkamine.  
 Triheptyl alcohol.  
 1:2:4-Trihydroxybenzene.  
 Trihydroxyiminotriphenacylamine.  
 Trihydroxypentane.  
 Trihydroxypentanthrene.  
 2:2':2''-Trihydroxy-1:1':1''-trinaphthylmethane.  
 Trimethylenecarbinol.  
 Trimethyltrimethylene glycols.  
 Trioctyl alcohol.  
 Triphenylcarbinol.  
 Triphenylsilicol.  
 Tropanol.  
 Usnetol.  
 $\alpha$ -Vinyl diacetonealkamine.  
 Violein.  
 Xyleneols.  
**Aldazine**,  $C_{12}H_{20}N_2$ , from the action of hydrazine hydrate on  $\alpha$ -methyl- $\beta$ -ethylacetaldehyde (DEMME), A., i, 256.  
**Aldehydase**, first appearance of, in the mammalian embryo (JACOBY), A., ii, 670.  
**Aldehyde**,  $C_7H_{12}O$ , from the aldol,  $C_7H_{14}O_2$  (WOGGINZ), A., i, 254.  
**Aldehydes**, study of (EIBNER), A., i, 376.  
 preparation of (IPATIEFF), A., i, 248.  
 $R\cdot CHMe\cdot CHO$ , preparation of (BOUGAULT), A., i, 383, 392.  
 specific difference between ketones and (OECHSNER DE CONINCK and SERVANT), A., i, 126.  
 acidimetry of (ASTRUC and MURCO), A., i, 66.  
 condensation of (LIEBEN), A., i, 449.  
 influence of light on the interaction of, with alcohols (CIAMICIAN and SILBER), A., i, 329.  
 action of acid chlorides on, in presence of zinc chloride (DESCUDÉ), A., i, 504, 644.  
 condensation products of, with amines (HANTZSCH and SCHWAB), A., i, 378.

**Aldehydes**, action of, on diamines (SCHOLTZ and JAROSS), A., i, 485.  
 action of barium hydroxide and of sodium on (LEDERER), A., i, 669.  
 condensation of, with barbituric acid (CONRAD and REINBACH), A., i, 410; (WEINSCHENK), A., i, 528.  
 action of benzamidine on (KUNCKELL and BAUER), A., i, 759.  
 condensation of, with ethyl cyanoacetate (BERTINI), A., i, 537.  
 action of hydrazobenzenes on (RASSOW; RASSOW and LUMMERZHEIM), A., i, 777.  
 action of, on  $\beta$ -naphthol (ROGOFF), A., i, 152; (HEWITT and TURNER), A., i, 207.  
 condensation of, with  $\beta$ -naphthol and amines (BERTI), A., i, 81, 611, 753; (BERTI and SPERONI), A., i, 81, 778.  
 compounds of, with aminophenylguanidine (PELLIZZARI and RICKARDS), A., i, 769.  
 compounds of, with complex acids (V. BAEYER and VILLIGER), A., i, 659.  
 compounds of, with proteids (SCHWARZ), A., i, 297.  
 bisulphite derivatives, new mode of decomposition of (FREUNDLER and BUNEL), A., i, 505.  
 formation of amides from (PICKARD and CARTER), T., 520; P., 1901, 45.  
 detection and identification of (RIMINI), A., i, 450.  
 estimation of, volumetrically (RIPPER), A., ii, 205.

**Aldehydes of the acetylene series**, syntheses of (MOUREU and DELANGE), A., i, 581.

**Aldehydes, aliphatic**, action of diazobenzene on (BAMBERGER and MULLER), A., i, 778.

**Aldehydes, aromatic**, synthesis of (REFORMATSKY), A., i, 327.

condensation of, with primary aromatic amines and their sulphonic acids (WALTER), A., i, 694.

substituted, action of 2-methyl-5-ethylpyridine on (CASTNER), A., i, 562; (BACH), A., i, 609.

action of, on 2-picoline (ROTH), A., i, 165; (BACKE), A., i, 562.

**Aldehydes**. See also:—

Acetaldehyde.  
 Acetoxymethylfurfural.  
 Acetyl bromal.  
 Acetyl chloral.  
 Aldols.  
 Amylpropionaldehyde.  
 Benzaldehyde.  
 Benzeneazohydroxytolualdehydes.

**Aldehydes**. See —

Benzeneazoresorcyaldehyde.  
 Benzoxymethylfurfural.  
 Bromal.  
*iso*Butaldehyde.  
*iso*Butaldol.  
 Chloral.  
 Cinnamaldehyde.  
 Citral.  
*cyclo*Citrals.  
 Citronellaldehyde.  
*o*-Cresolaldehyde.  
 Crotonaldehyde.  
 Cuminaldehyde.  
 Difurfuryl ethanediolaldehyde.  
 Dihydroxydihydrocitronellaldehyde.  
 Dimethylaminobenzaldehyde.  
 2:5-Dimethylbenzaldehyde.  
 $\beta\zeta$ -Dimethyl- $\beta\epsilon$ -octadiene- $\theta$ -al.  
*aa*-Dimethylolpropaldehyde.  
 Diosphenol.  
 3:4-Dioxymethylenehydratropaldehyde.  
*p*-Ethoxybenzaldehyde.  
 Formaldehyde.  
 Furfuraldehyde.  
 Glyceraldehyde.  
 Glycolaldehyde.  
 Glyoxal.  
 Hepteno-aldehyde.  
 Hydroxyazoaldehydes.  
*p*-Hydroxybenzaldehyde.  
 $\alpha$ -Hydroxy*iso*butaldehyde.  
 $\beta$ -Hydroxy-*aa*-dimethylpropaldehyde.  
 2-Hydroxy-5-methylolbenzaldehyde.  
 Hydroxynaphthaldehydes.  
 Hydroxytolualdehydes.  
 Lemonal.  
 Metaformaldehyde (*trioxymethylene*).  
 1-Methanal-2-naphthylol.  
 $\alpha$ -Methyl- $\beta$ -ethylacetaldehyde.  
 Methylfurfural.  
 3-Methyloctanone-7-al.  
 Methylvanillin.  
 Myrcenyl aldehyde.  
 Nonaldehyde.  
 Paraformaldehyde.  
 Propaldehyde.  
 Salicylaldehyde.  
 Succindialdehyde.  
 5-*p*-Sulphobenzeneazo-2-hydroxy-*m*-tolualdehyde.  
*o*-Triazobenzaldehyde.  
*p*-Triazobenzaldehyde.  
 2-Triazo-3:5-dimethylbenzaldehyde.  
 Tri-2:5-dimethylbenzaldehyde.  
 Trioxymethylene.  
*iso* Valeraldehyde.  
 Vanillin.

**Aldehydo-acids**, aliphatic - $\gamma$ - and aromatic -*o*- (BISTRZYCKI and HERBST), A., i, 386.

- p*-Aldehydocinnamic acid**, methyl ester (EPHRAIM), A., i, 688.
- Aldol** (*acetaldol*) (HALPERN), A., i, 255. action of phenylhydrazine on (TRENER), A., i, 232.
- from isobutaldehyde and salicylaldehyde (HERZOG and KRUH), A., i, 213.
- $C_6H_{12}O_3$ , and its oxime and diacetate, from the condensation of  $\alpha$ -hydroxybutaldehyde with acetaldehyde (ROESLER), A., i, 669.
- $C_7H_{14}O_2$ , and its oxime, from the condensation of isovaleraldehyde with acetaldehyde (WOGGINZ), A., i, 254.
- $C_7H_{14}O_2$ , and its oxime, from the condensation of isobutaldehyde with propaldehyde (KOHN), A., i, 255.
- $C_8H_{14}O_2$ , and its oxime, from the condensation of isobutaldehyde with crotonaldehyde (PLATTENSTEINER), A., i, 254.
- $C_{10}H_{12}O_2$ , from the condensation of benzaldehyde with propaldehyde (HACKHOFFER), A., i, 277.
- $C_{12}H_{16}O_3$ , from *o*-ethoxybenzaldehyde and isobutaldehyde (HERZOG and KRUH), A., i, 213.
- $C_{12}H_{16}O_3$ , from the condensation of *p*-ethoxybenzaldehyde and isobutaldehyde (HILDESHEIMER), A., i, 645.
- Aldols**, preparation of (LIEBEN), A., i, 449.
- iso*Aldoxime ethers**, intramolecular rearrangement of (WEGENER), A., i, 152.
- Aldoximes**, action of alkyl haloids on (DUNSTAN and GOULDING), T., 628; P., 1901, 84.
- aromatic and aliphatic, oxidation of (BAMBERGER and SCHEUTZ), A., i, 548.
- o*-Aldoximophenylazo-*o*-aldoximoanilide** (BAMBERGER and DEMUTH), A., i, 392.
- Alectoric acid** and acid from it (HESSE), A., i, 149.
- Aleurone-grains**, microchemical examination of (TSCHIRCH and KREIZLER), A., ii, 33.
- Alexin**, origin of the, of blood serum (GENGOU), A., ii, 256.
- Algæ**, lower chlorophyllous, assimilation and fixation of nitrogen by (KRÜGER and SCHNEIDEWIND), A., ii, 411.
- Algodonite** from Lake Superior (KOENIG), A., ii, 109.
- Alimentary canal**, cellulose digestion in the (MÜLLER), A., ii, 252.
- Alimentary substances**, estimation of "saccharin" in (DÉFOURNEL), A., ii, 588.
- Alinit**. See Agricultural Chemistry.
- Alkali**, free, estimation of, in presence of carbonate (RIDENOUR), A., ii, 691.
- Alkali chlorates and chlorides**, solubility of (WINTELER), A., ii, 96.
- chlorides and nitrates, electrical conductivity of aqueous solutions of (KOHLEAUSCH and MALBY), A., ii, 82.
- ferrates, electrochemical formation of (HABER and PICK), A., ii, 103; (PICK), A., ii, 554.
- haloids, molecular depression of the temperature of maximum density of aqueous solutions of (DE COPPET), A., ii, 493.
- iodates, electrical conductivity of solutions of, and a formula for calculating the conductivity (KOHLEAUSCH), A., ii, 221.
- periodates, electrolytic preparation of (MÜLLER), A., ii, 380.
- metals, electrolytic preparation of (FISCHER), A., ii, 96.
- infra-red spectra of the (LEHMANN), A., ii, 142.
- salts, vapour pressure of aqueous alcoholic solutions of (WREWSKY), A., ii, 56.
- sulphates and barium, simultaneous presence of, in mineral waters (CARLES), A., ii, 506.
- persulphates, properties and estimation of (MOREAU), A., ii, 575.
- thiosulphates, action of potassium permanganate on (DOBBIN), A., ii, 311.
- Alkaline earth carbonates**, action of acids on, in presence of alcohol (VALLÉE), A., ii, 239.
- estimation of, in soils (IMMENDORFF), A., ii, 130.
- metals, infra-red spectra of the (LEHMANN), A., ii, 142.
- salts, vapour pressure of aqueous alcoholic solutions of (WREWSKY), A., ii, 56.
- Alkalinity** of solutions containing chlorates, chromates and hypochlorites (v. HUBER), A., ii, 276.
- Alkalies**, reactions of carbon monoxide and oxygen in presence of (BERTHELOT), A., ii, 17.
- poisonous effects of solutions of (MOORE), A., ii, 68.
- of complex function, titration of (BERTHELOT), A., ii, 497.
- Alkaloids** from angostura bark (HARTWICH and GAMPER), A., ii, 70.
- occurrence of, in Cactaceæ (HEFFTER), A., i, 736; (HEYL), A., i, 738.
- from *Catha edulis* (BEITTEK), A., ii, 268.

**Alkaloids** of *Chelidonium majus* (SCHMIDT), A., i, 742; (WINTGEN), A., i, 743.  
 from *Erysimum aureum* (SCHLAGDEN-HAUFFEN and REEB), A., i, 39.  
 of *Eschscholzia californica* (SCHMIDT), A., i, 742; (FISCHER), A., i, 743.  
 of *Glaucium luteum* (SCHMIDT), A., i, 742; (FISCHER), A., i, 743.  
 of mandragora roots (THOMS and WENTZEL), A., i, 405; (HESSE), A., i, 740.  
 of the Papaveraceæ (SCHMIDT), A., i, 742.  
 of *Peganum Harmala* (FISCHER), A., i, 405.  
 from the balsam of *Picea vulgaris* (TSCHIRCH and BRÜNING), A., i, 92.  
 from the resin-balsam of *Pinus Pinaster* (TSCHIRCH and BRUNING), A., i, 221.  
 of *Sanguinaria canadensis* (SCHMIDT; FISCHER), A., i, 742.  
 solubility of, in carbon tetrachloride (SCHINDELMEISER), A., i, 287.  
 behaviour of acid aqueous solutions of, towards different solvents, and resisting power of, to putrefaction (PROELSS), A., ii, 706.  
 vegetable, action of, on certain indicators (ASTRUO), A., i, 604.  
 action of *p*-xylylene bromide on (MANOUKIAN), A., i, 528.  
 arylthiosulphonates of (TRÖGER and LINDE), A., i, 338.  
 nitro-derivatives of, physiological action of (WALKO), A., ii, 669.  
 physiological action of some (SCHMIEDEBERG), A., ii, 674.  
 analytical chemistry of the (KIPPENBERGER), A., ii, 52, 79.  
 microchemical investigation of (POZZI-ESCOT), A., ii, 432, 485.  
 formalinsulphuric acid as a test for (WIRTHLE), A., ii, 363; (ELIAS), A., ii, 630.  
 estimation of the amount of, in cinchona barks (VAN KEDEL), A., ii, 362.  
 estimation of, in drugs (GORDIN), A., ii, 485.  
 estimation of, in urine (GUILLEMARD), A., ii, 521.

**Alkaloids.** See also :—  
 Aconitine.  
*l*-isoAmylconiine.  
 Anhalamine.  
 Anhalonidine.  
 Arginine.  
 Aspidospermine.  
 Atropine.  
 3-Benzylxanthine.  
 Brucine.  
 Caffeine.

**Alkaloids.** See :—  
 Chelerythrine.  
 Chelidonine.  
 Cinchonidine.  
 Cinchonines.  
 Cinchotoxine.  
 Cocaine.  
 isoCodeine.  
 Colchicine.  
 Conhydrine.  
 Corybulbine.  
 Corydaline.  
 Cotarnine.  
 Creatine.  
 Creatinine.  
 Cytisine.  
 Damascenine.  
 Deoxyguanine.  
 Deoxyxanthine.  
 2:6-Dimethylxanthine.  
 Eegonine.  
 Echinopsine.  
 Epinephrine.  
*l*-Ethylconiine.  
 3-Ethylxanthine.  
 Glaucine.  
 Guanine.  
 Harmaline.  
 Harmine.  
 Homochelidonine.  
 Hydrocinchonine.  
 Hydroxycytisine.  
 Hyosicine.  
 Hyoscyamine.  
 $\psi$ -Hyoscyamine.  
 Japaconitine.  
 Mandragorine.  
 Methi-isomorphimethine.  
 Methylanhalonidine.  
 Methylbenzaconine.  
 Methylene-dicytisine.  
 Methylgranatonine.  
 Methylmezcaline.  
 Methylmorpholine.  
 Methylquinine.  
 Methylxanthines.  
 Mezcaline.  
 Morphinine.  
 Morphine.  
 isoMorphine.  
 Morpholine.  
 Nicotine.  
 Nicotelline.  
 Nicotimine.  
 Nicotine.  
 Pectenine.  
 Phenylmorpholine.  
 3-Phenylxanthine.  
 Pilocarpine.  
 isoPilocarpine.  
 Pilocerine.  
 Piperine.

- Alkaloids.** See:—  
 7-Propylconiine.  
 Protopine.  
 Pseudoaconitine.  
 Pyraconitine.  
 Quinine.  
 Quinotoxine.  
 Sambucine.  
 Sanguinarine.  
 Scopolamine.  
 Solanine.  
 Strychnine.  
 Tautocinchonine.  
 Thebenidine.  
 Theobromine.  
 Theophylline.  
 Tropidine.  
 Xanthine.
- Alkyl bromide or iodide**, action of, on magnesium (GRIGNARD), A., i, 263, 679; (TISSIER & GRIGNARD), A., i, 440.  
 carbonates, preparation of (FARBEN-FABRIKEN VORM. F. BAYER & Co.), A., i, 662; (CHEMISCHES FABRIK VON HEYDEN), A., i, 696.  
 haloids, nitrates, and sulphates, dissociation of (NEF), A., i, 626.  
 haloids, action of, on aldoximes and ketoximes (DUNSTAN and GOULDING), T., 628; P., 1901, 84.  
 iodides, combination of, with tertiary amines (WEDEKIND), A., i, 639.  
 thiocyanates and isothiocyanates, action of, on thioacetic and thio-benzoic acids (WHEELER and MERRIAM), A., i, 514.
- m-Alkylaminophenols**, preparation of (GRIMAU), A., i, 269.
- Alkylation of acylarylamines** (LANDER), T., 690; P., 1901, 59.
- Alkylbenzenes**, bromination and iodination of (EDINGER and GOLDBERG), A., i, 22, 23.
- $\beta$ -Alkylbutenoic acids** ( $\beta$ -alkylvinyl-acetic acids),  $\gamma$ -cyano- (GUARESCHI), A., i, 630.
- Alkylcarbamic acids**, esters, preparation of (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 662, 663.
- Alkylcyanoacetic acids**, esters, action of, on diazonium chlorides (FAVREL), A., i, 363.
- Alkyl- $\psi$ -indophenazines** (MARCHLEWSKI and BURACZEWSKI), A., i, 348.
- Alkylmalonic acids**, action of, on diazonium chlorides (FAVREL), A., i, 621.
- Alkylloxides**, sodium, action of, on benzophenone chloride and on benzyldene chloride (MACKENZIE), T., 1206; P., 1901, 150.
- p-Alkylloxybenzylanilines**, new method of preparing, and their homologues (FRITSCH), A., i, 268.
- Alkylquinazolines**, formation of (GOTTHELF), A., i, 766.
- Alkyls**, displacement of, from phenols by nitration (LARTER), P., 1901, 183.
- Alkylsulphonacetic acids**, anilides of (GROTHE), A., i, 79.
- $\beta$ -Alkylvinylacetic acids.** See  $\beta$ -Alkylbutenoic acids.
- Allantoin**, formation of, from uric acid in the body (SWAIN), A., ii, 610.  
 imino-, and its salts (DOEBNER and GÄRTNER), A., i, 261.
- Allophanic acid**, ethyl ester, formation of, from the azoimides of hydroxyacids (CURTIUS and MÜLLER), A., i, 779.
- Alloys** made in the electric furnace (HAMILTON and SMITH), A., ii, 385.  
 thermal and electrical conductivity of (JÄGER and DIESELHORST; RIETZSCH), A., ii, 84.  
 specific heat of (MAZZOTTO), A., ii, 492.  
 the specific volume as the determining criterion of chemical combination in (MARY), A., ii, 655.  
 density of (VAN AUBEL), A., ii, 453.  
 hardness of (BENEDICKS), A., ii, 374.  
 action of ammonia on, at high temperatures (BEILBY and HENDERSON), T., 1245; P., 1901, 190.
- Allyl alcohol**, compounds of, with mercuric haloids, constitution of (SAND), A., i, 458.
- Allyl disulphide** (BLANKSMA), A., i, 461.  
 sulphide, thermochemistry of (BERTHELOT), A., ii, 146.
- Allylbenzamide**, 2-chloro- (WHEELER and MERRIAM), A., i, 515.
- Allylmalamides**, *d*- $\alpha$ - and *l*- $\beta$ - (LUTZ), A., i, 10.
- p-Allyloxyphenyl-carbamide and -thio-carbamide** (SPIEGEL and SABBATH), A., i, 534.
- Allylphenols**, isomeric, colour reactions to distinguish (CHAPMAN), A., ii, 76.
- Allylphenylcarbamide**,  $\beta$ -chloro- (DIXON), T., 558; P., 1901, 49.
- Allylthiocarbimide**,  $\beta$ -chloro-, action of ammonia, aniline, benzylamine, benzylaniline, phenylhydrazine, piperidine, and *o*- and *p*-toluidine on (DIXON), T., 554; P., 1901, 49.
- Allylthiohydantoin**, chloro- (DIXON), T., 556; P., 1901, 49.
- Aloes** from Natal (TSCHIRCH and KLAVENESS), A., i, 399.  
 from Uganda (TSCHIRCH and KLAVENESS), A., i, 602.

- Aloin**, oxidation of, with potassium persulphate and with Caro's acid (SEEL), A., i, 92.
- Alpinia officinarum**, colouring matter from (PERKIN), P., 1901, 87; (TESTONI), A., i, 92.
- Alpinia oil** from *Alpinia malaccensis* (VAN ROMBURGH), A., i, 219; (SCHIMMEL & Co.), A., i, 394.
- Alpinin** (TESTONI), A., i, 92.
- Alum**, detection of, in wines (LOPRESTI), A., ii, 198.
- Alums**, melting points and solubilities of (LOCKE), A., ii, 656.
- Aluminium**, supposed alteration of the properties of (SPICA), A., ii, 602.
- change in the chemical properties of, when in contact with mercury (LE BON), A., ii, 20.
- heat of rapid combustion of (BERTHELOT), A., ii, 388.
- melting point of (HOLBORN and DAY), A., ii, 85.
- mercury couple, use of, as a halogen carrier (COHEN and DAKIN), T., 1111; P., 1901, 91.
- reducing properties of (DUBOIN), A., ii, 315.
- condition of, in vegetable soils (SCHLESING), A., ii, 471.
- Aluminium alloys** with antimony, density of (VAN AUBEL), A., ii, 453.
- with chromium, effect of various compounds on the periodicity of (OSTWALD), A., ii, 24.
- with copper, iron, cobalt, nickel, manganese, and with platinum (BRUNCK), A., ii, 656.
- with magnesium (BOUDOUARD), A., ii, 512.
- with molybdenum (GUILLET), A., ii, 512, 602.
- with tungsten (GUILLET), A., ii, 388.
- Aluminium ammonio-chlorides** (BAUD), A., ii, 161, 303.
- thermochemistry of (BAUD), A., ii, 224, 303.
- Aluminium bromide**, action of, on acyclic hydrocarbons (POURET), A., i, 305.
- compound of, with bromine and carbon disulphide (PLOTHKOFF), A., ii, 316.
- chloride, and iodide, preparation of (GUSTAVSON), A., ii, 316.
- and iodide, molecular weight of (KOHLEK), A., ii, 21.
- chloride, catalytic action of (RUFF), A., ii, 500.
- action of, on camphoric anhydride (LEES and PERKIN), T., 332; P., 1898, 111; 1899, 23; 1900, 18; (PERKIN and YATES), T., 1373.
- LXXX. ii.
- Aluminium chloride**, action of, on isolaunonic acid (LEES and PERKIN), T., 356.
- compound of, with acetic chloride, and its interaction with benzene (BOESEKEN), A., i, 474.
- compounds of, with ammonia (BAUD), A., ii, 161, 303.
- compounds of, with fatty alcohols (PERRIER and POUGET), A., i, 442.
- hydroxide, solubility of, in ammonium salicylate (WOLFF), A., ii, 198.
- oxide (*alumina*), band spectrum of (BERNDT), A., ii, 367.
- in mineral waters (PARMENTIER), A., ii, 516.
- Aluminium organic compounds**, molecular weight of (KOHLEK), A., ii, 21.
- Aluminium, estimation of:**—
- estimation of, in steel (SPATZ), A., ii, 349.
- Amalgams.** See Mercury alloys.
- Amblygonite** from Montebias (LASNE), A., ii, 455.
- Amides**, true, and the so-called *iso*-amides (HANTZSCH and VOGEL), A., i, 676.
- formation of (ORTON), T., 1351; P., 1901, 200.
- formation of, from aldehydes (PICKARD and CARTER), T., 520; P., 1901, 45.
- substituted, preparation of, from the corresponding sodamides (TITHERLEY), T., 391; P., 1901, 29.
- Amidosulphuric acid**, action of, on *p*-chloroaniline (PAAL), A., i, 693.
- action of, on piperidine (PAAL and HUBALECK), A., i, 745.
- Amine hydrochlorides**, action of ammonia on (BIDET), A., i, 634.
- Amines** from the reduction of oximes (KONOWALOFF), A., i, 281.
- preparation of, from sodamides, by means of potassium alkyl sulphates (TITHERLEY), T., 399; P., 1901, 30.
- synthesis of, by the aid of alkyl salicylates (TINGLE), A., i, 200.
- action of acetyl bromo- and acetylchloro-amino-2:4-dichlorobenzenes on (CHATTAWAY and ORTON), T., 461; P., 1901, 38.
- action of bases and acids on salts of the (COLSON), A., ii, 496.
- condensation products of, with aldehydes (HANTZSCH and SCHWAB), A., i, 378.
- condensation products of, with formaldehyde (GOLDSCHMIDT), A., i, 652.
- condensation of, with hydroxybenzyl haloids (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 713.

**Amines**, combination of, with lithium chloride (BONNEFOI), A., ii, 653.  
 aromatic, direct production of, from the hydrocarbon (GRAEBE), A., i, 523.  
 new method of preparing, from and nitro-compounds (SABATIER SENDERENS), A., i, 638.  
 electrochemical reduction of nitro-compounds to (ELBS and SILBERMANN), A., i, 459; (CHILESOTTI), A., i, 587; (BOEHRINGER & SONS), A., i, 684.  
 action of, on substituted aminobenzenophenones in presence of sulphuric acid (LEMOULT), A., i, 425.  
 compounds of, with metallic salts (TOMBECK), A., i, 135, 164, 266.  
 reaction of, with wood (COVELLI), A., ii, 705.  
 phosphates of, and the dependence of their formation and stability on their composition and structure (RAIKOW and SCHATBANOW), A., i, 319.  
 sulphur derivatives of (EDINGER), A., i, 166; (EDINGER and ARNOLD), A., i, 753.  
 thiosulphonic acids of (CLAYTON ANILINE Co.), A., i, 694.  
 primary, and their sulphonic acids, condensation of, with aromatic aldehydes (WALTER), A., i, 694.  
 action of, on mucobromic and mucochloric acids (SIMONIS), A., i, 268.  
 tertiary (HAEUSSERMANN), A., i, 229.  
 fatty, action of hydrogen peroxide on (MAMLOCK and WOLFFENSTEIN), A., i, 673.  
 primary, boiling points of the series of (HENRY), A., i, 128.  
 action of nitroso-acylamines on (APITZSCH), A., i, 138.  
 condensation of, with  $\beta$ -naphthol and aldehydes (BETTI), A., i, 81, 611, 753; (BETTI and SPERONI), A., i, 81, 778.  
 primary and secondary, diagnosis of (HINSBERG), A., i, 128.  
 primary, secondary and tertiary, action of *p*-xylylene bromide on (MANOUKIAN), A., i, 528.  
 secondary, formation of (DUNSTAN and GOULDING), T., 639; P. 1901, 84.  
 tertiary, limits of combination in (WEDEKIND), A., i, 639.  
 action of  $\alpha$ -chlorohydrin on, and bases from (BIENENTHAL), A., i, 128.

**Amines.** See also :—

Acetophenoneaminophenylguanidine salts.  
*m*-Acetylaminodimethyl-*p*-toluidine.  
 4'-Acetylaminodi-phenylamine.  
 Acetylenetriphenyltri-amine.  
 Acetyl-*o*-phenylenediamine.  
*p*-Alkyloxybenzylanilines.  
 Amylamine.  
 Anhydroformaldehydeaniline.  
 Aniline.  
 Anilinobenzene.  
 Anilino-4:5-dimethylpyrimidine, amino-.  
 3-Anilindiphenylfluorindine.  
 Anilinoguanidine.  
 5-Anilino-7-methylnaphthaphenazonium salts.  
 Anilinocyclopentene.  
 Anilinophenylthiodiazole.  
 Anilinoaposafranine.  
*o*-Anisidine.  
 Anisole, triamino-.  
 Anisylanilinourazole.  
 10-Anthramine.  
 Arylamines.  
 Arylhydroxylamines.  
 Benzaldehyde-*p*-bromo- and -*p*-chloro-aniline.  
 Benzamidine.  
 Benzhydrylamine.  
 Ben-zidine.  
 Benzoylbenzylamine.  
 Benzoylethylideneaniline.  
 Benzoyltoluidides, *o*-amino-.  
*o*-Benzoyl-*m*-xylylide, *o*-amino-.  
 Benzylamine.  
 Benzylaniline.  
 Benzylantipyryne, amino-.  
 Benzyl-dihydroisindole, *o*-amino-.  
 Benzylethylaniline.  
 Benzylhydrindamine.  
 $\beta$ -Benzylhydroxylamine.  
 Benzylideneaminophenanthrene.  
 Benzylideneaminophenylguanidine salts.  
 Benzylideneaniline.  
 Benzylidene-*p*-anisidine.  
 Benzylidenebenzamidine.  
 Benzylidenebisaminothiazole.  
 Benzylidenedianiline.  
 Benzylidene-1-methylazimino-*m*-toluidine.  
 Benzylidene-*o*-phenetidine.  
 Benzylidene-*p*-toluidine.  
 Benzyltoluidines.  
 Bisdinaphthaxanthoneamine.  
 Brassamine.  
 Butane,  $\alpha\gamma$ -diamino-.  
 Butane,  $\beta\gamma$ -bromoamino-.  
*d*-sec. Butylamine.  
 Butyldenedianiline.



**Amines. See:—**

*iso*-Butyramidine.  
 Camphene, 1-amino-.  
 Carbanilinodi- $\alpha$ -naphthylethylene-diamine.  
 Chloralaminophenylguanidine nitrate.  
 Citralaminophenylguanidine salts.  
 $\psi$ -Cumidine.  
 Cytisine, amino-.  
*m*-Dialkylaminoalkyloxybenzenes.  
 Diamines.  
 2:6-Dianilino-4:5-dimethylpyrimidine.  
 3:10-Dianilinodiphenylfluorindine.  
 Dibenzylamine.  
 Dibenzyl-*p*-toluidine.  
 Di*iso*butylamine.  
 Dicarbanilinodi- $\psi$ -cumylethylene-diamine.  
 Dicarbanilinodiphenylethylene-diamine.  
 Dicarbanilinoditolyethylenediamines.  
 Dicarbanilinodixylylethylene-diamine.  
 Di- $\psi$ -cumylethylene-diamine.  
 Dihydro*iso*indole, 5-amino-.  
 Dihydroxydiethyl*iso*amylamine.  
 Dihydroxydiethylbutylamines.  
 Dihydroxydiethylheptylamine.  
 Dihydroxydiethylhexylamine.  
 Dihydroxydiethylpropylamines.  
*p*-Dihydroxydiphenyl-4:6-*dinitro*-1:3-phenylene-diamine.  
 Dimethylaminocycloheptane.  
 Dimethylaminocycloheptenes.  
*p*-Dimethylaminophenylaminobenzylcyanide.  
 Dimethylaniline.  
 Dimethylanilinephthalein, amino-.  
 Dimethyldiazoaminotoluene.  
 Dimethyldiethyl*tetrachlororhodamine*.  
 3:7-Dimethyl-5-phenylacridine, 2:8-*diamino*-.  
*s*-Dimethyl-*o*-phenylene-diamine.  
 2:4-Dimethylphenylhydroxylamine.  
 2:4-Dimethylpyridine, 6-amino-.  
 4:5-Dimethylpyrimidine, amino-.  
 Dimethylthujylamine.  
 Dimethyl-*m*-toluidine-*p*-anisole.  
 Dimethyltoluidines.  
 Di- $\alpha$ -naphthylethylene-diamine.  
 2:6-Dioxy-1:3-dimethylpyrimidine, amino-.  
 2:6-Dioxy-3-methylpyrimidine, amino-.  
 2:5-Dioxy-3-phenylpurine, 7-amino-.  
 Diphenylamine.  
 Diphenylamine, amino-.  
 3:3'-Diphenylbenzidine.  
 $\alpha\beta$ -Diphenyl- $\gamma$ -benzylhydroxyamidine.  
 $\alpha\delta$ -Diphenyl- $\alpha\gamma$ -butadiene, di-*p*-amino-.

**Amines. See:—**

Diphenylethylenediamine.  
 Diphenylformoguanamine.  
*s*-Diphenyl-*p*-nitrobenzenylamidine.  
 Diphenyl-*p*-phenylene-diamine.  
 Diphenylpiperidylethylenylamidine.  
 1:4-Diphenyl-5-thio-1:2:4-triazolone-hydrothiamine.  
 Diphenyl-*m*-toluidine.  
 1:4-Diphenyl-1:2:4-triazolonethio-aminobenzene.  
 Diphenyl-*o*-xylylenemethylenediamine.  
 Dipropylamine.  
 5-9-Di-*p*-toluidino-7-*p*-tolyl-naphthaphenazonium chloride.  
 Ditolyethylenediamines.  
 Ditolyformoguanamines.  
 Di-*p*-tolylsulphonohydroxylamine.  
 Di-*p*-tolylsulphonomethylamine.  
 Di-*p*-tolyl-*o*-xylylenediamine.  
 Di-*p*-tolyl-*o*-xylylenemethylene-diamine.  
 Di-2:4:5-trimethylbenzylamine.  
 Dixylylethylene-diamine.  
 Elaidamine.  
 Ethoxalylacetyl-*p*-nitrobenzamidine.  
 Ethylaniline.  
 $\beta$ -Ethyl*sec*.butylhydroxylamine.  
 Ethylene-diamine.  
 Ethylhydroxyethylamine.  
 Ethylideneaminophenylguanidine nitrate.  
 Ethylideneaniline.  
 Ethylidenebenzylamine.  
 Ethylidenedianiline.  
 Ethylidene-*o*-toluidine.  
 1:3:5-Ethylxylylidine.  
 Flavinduline, amino-.  
 Fluorene, 2-amino-.  
 Formylhexamethoxydimethylleucaniline.  
 Furfurylideneaminophenylguanidine salts.  
 Galactosamine.  
 $\alpha$ -Gallonaphthylamine.  
 Glucamine.  
 Glucosamine.  
 $\psi$ -Granatylamine.  
 Guanamines.  
 $\Delta^2$ -cycloHeptene, amino-.  
 Heptylidenedianiline.  
 Hexahydroxy-leucaniline.  
 Hexamethyl-4:4':4''-tri-amino-2-hydroxytriphenylmethane.  
 Hexamethyl-4:4':4''-tri-aminophenyl-fluorene.  
 Hexamethylenediamine.  
 Hexamethylenetetramine.  
 Hexane,  $\alpha\zeta$ -diamino-.  
 Hydrindamine.  
 Hydroxyamidines.

**Amines.** See:—

$\beta$ -Hydroxy- $\beta$ -*o*-aminophenyl-2-ethylpyridine.  
 2-Hydroxy-3-*o*-aminophenylquinoxaline.  
*o*-Hydroxybenzylideneaminophenylguanidine.  
*o*-Hydroxybenzylideneaniline.  
*o*-Hydroxybenzylidenebenzamidine.  
*o*-Hydroxybenzylidene-*o*-phenetidine.  
*o*-Hydroxybenzylidene-*o*-toluidine.  
 Hydroxyethylisoomylamine.  
 Hydroxyethylbutylamines.  
 Hydroxyethyldiisoomylamine.  
 Hydroxyethyldiisobutylamine.  
 Hydroxyethylpropylamine.  
 Hydroxyethylheptylamine.  
 Hydroxyethylhexylamine.  
 Hydroxyethylpropylamines.  
 Hydroxyhexahydrobenzylamine.  
 Hydroxyhydrindene, amino-.  
 Hydroxylamine.  
 Hydroxylaminoisobutyramidine.  
 Hydroxymethylhexahydrobenzyl-aniline.  
 Hydroxymethylisopropylhexahydrobenzyl-amines, -aniline, -dimethylamine, and -diethylamine.  
 6-Hydroxynaphthaphenazine, 5-amino-.  
 6-Hydroxy-2-*p*-nitrophenylpyrimidine-4-carbo-*p*-nitrobenzamidine.  
*p*-Hydroxyphenyl-*m*-tolylamine, *p*-amino-.  
 Hydroxytrimethylhexahydrobenzyl-aniline.  
 Infracampholene, amino-.  
 Melamine.  
 Mesitylhydroxylamine.  
 2-Methoxy-4-methylpyrimidine, 5-amino-.  
 Methylamines.  
 Methylaminocycloheptadiene.  
 Methylaminophenylthiodiazole.  
 Methylaminotoluenes.  
 Methylaniline.  
 1-Methylaziminochlorotoluidine.  
 1-Methylaziminotoluene, amino-.  
 Methylbenzylideneaminophenylguanidine.  
 Methylcyclobutane,  $\omega$ -amino-.  
 Methyl dihydroxydiethylamine.  
 Methyl ethylamine.  
 Methylhexylenediamine.  
 $\beta$ -Methylhydrindene,  $\alpha$ -amino-.  
 Methylhydroxyethylamine.  
 1-Methylnaphthaphenazonium, amino-.  
 $\beta$ -Methylpentane,  $\beta\delta$ -diamino-.  
 Methylisopropylamine.  
 Methylisopropylhexahydrobenzyl-aniline.

**Amines.** See:—

Methylisopropyltetrahydrobenzyl-dimethylamine.  
 Methylisopropyltetrahydrobenzyl-aniline.  
 7-Methylpurine, 5-amino-.  
 4-Methylpyrimidine, amino-.  
 Methyl-*p*-toluidine.  
 Methyltolylenediamines.  
 Methyltropans.  
 Naphthaphenazine, diamino-.  
 $\alpha$ -Naphthaquinone-3-phenylenediamines.  
 $\alpha$ -Naphthaquinonetetramethyldiaminodiphenylmethane.  
 4-Naphthol-2-tetramethyldiaminodiphenylmethane, 1-amino-.  
 Naphthylamines.  
 Naphthylenediamines.  
 $\beta$ -Naphthylethylamine.  
 Octane  $\alpha\theta$ -diamino-.  
 Octomethylenediamine.  
 Opianylidene-*p*-hydroxyaniline.  
 isoOxyazolonophenylhydrazine, amino-.  
 2-Oxy-3-phenylpurine, amino-.  
 1:2:2:5:5-Pentamethylpyrrolidine, 3-amino-.  
 Phenanthrene, 9-amino-.  
 Phenanthrylamines.  
*p*-Phenetidine.  
 Pheno- $\alpha$ -aminoheptamethylene.  
 Phenonaphthoxazone, amino-.  
 3-Phenyladenine.  
 Phenylanilinodithiodiazolone.  
 Phenylanilinourazole.  
 Phenylanisidinourazole.  
 Phenylbenzenylthioureaphenylamidine.  
 Phenylbenzimidazoazoles, amino-.  
 Phenylbenzoxazole, 1-*p*-amino-.  
 Phenylbenzylidene-*p*-phenylenediamine.  
 $\beta$ -Phenyl- $\gamma$ -benzyl- $\alpha\beta$ -naphthylhydroxyamidine.  
 Phenyl dibenzylaminourazole.  
 Phenyl diethylaminourazole.  
 1-Phenyl-3,4-dimethylpyrazole, amino-.  
 Phenylenediamines.  
*o*-Phenylenemethyldiamine.  
 Phenylguanidine, amino-.  
 Phenylhydroxylamine.  
 Phenylmethylaminourazole.  
 1-Phenyl-3-methyl-4-ethylpyrazole, amino-.  
 Phenyl naphthaphenazonium salts, amino-.  
 Phenyl dinitronaphthylamine.  
 $\beta$ -Phenyl- $\alpha$ -*m*-nitrophenyl- $\gamma$ -benzylhydroxyamidine.  
 9-Phenylphenanthrolines, amino-.

**Amines.** See :—

Phenyl-*p*-phenylenediamine.  
 3-Phenylpurine, amino-.  
 Phenylquinoline, 2:3-*diamino*-.  
 Phenylrosinduline chloride, 3-amino-.  
 Phenyltetrazole, amino-.  
 Phenylthiodiazole, amino-.  
 Phenyl-*p*-toluinourazoles.  
 Phenyl-*p*-tolylamine.  
 $\beta$ -Phenyl- $\alpha$ -*o*-tolyl- $\gamma$ -benzylhydroxy-  
 amidine.  
 Phenyl *p*-tolyl sulphide, amino-.  
 Pinocamphylamine.  
 Propane,  $\alpha\gamma$ -*diamino*-.  
 Propane,  $\alpha\beta\gamma$ -*triamino*-.  
*iso*Propanolamine.  
 Propylideneaniline.  
 Purine, 5-amino-.  
 Pyrrolidines, amino-.  
 Quinonediphenylimide, amino-.  
 Rosindone, amino-.  
 Rosindulines, amino-.  
 Stilbene, amino-.  
 Tetradecylacetylene, amino-.  
 Tetrahydrobenzylamine.  
 $\alpha$ -Tetrahydro- $\alpha$ - and  $\beta$ -naphthyl-  
 amines.  
 Tetramethyldiaminocycloheptene.  
 Tetramethylenylmethylamine.  
 2:2:5:5-Tetramethylpyrrolidine,  
 3-amino-.  
 Tetraphenylphenylenediamines.  
 Thiophenideneaminothiazoles.  
 Thiophenideneaniline.  
 Thiophenidene-*p*-toluidine.  
*p*-Tolacylidine-benzamidine and -*p*-  
 tolenylamidine.  
*p*-Tolenylamidine.  
 Tolidine.  
 Toluidines.  
 5-*p*-Toluidino-7-*p*-tolyl-naphthaphen-  
 azonium 7-chloride.  
*p*-Toluquinoneditolylimide, amino-.  
*o*-Tolylaminobenzyl cyanide.  
 Tolylenediamines.  
 Tolyphthalide, amino-.  
*p*-Tolyrosinduline, amino-.  
*p*-Tolylsulphonocarbinylaniline.  
*p*-Tolylsulphonohydroxylamine.  
 Triethylamine.  
 Triethylmelamine.  
 Trihydroxyiminotriphenacylamine.  
 3:4:5-Trimethoxybenzylmethylamine.  
 Timethylamine.  
 2:4:6-Trimethylbenzylideneaniline.  
 2:4:6-Trimethylbenzylidene- $\psi$ -cumid-  
 ine.  
 Trimethylenecarbinylamine.  
 Trimethylenecarboxylic acid, amine of.  
 Trimethylenediamine.  
 Trimethylhexahydrobenzylaniline.  
 Trimethyltetrahydrobenzylaniline.

**Amines.** See :—

Tripropylamine.  
 Tropan.  
 $\alpha$ -Undecylene, amino-.  
 Urethanophenylacetoxamidine.  
*iso*Valeraldehydeaniline.  
*iso*Valeraldehyde-*p*-toluidine.  
 Valerylidenedianiline.  
 Vanillideneaminophenylguanidine  
 picrate.  
 Xylenehydroxylamines.  
 Xylidines.  
 Xylylenediamines.  
 1:3-Xylyl 5-oxide, 2:2'-*diamino*-.  
**Amino-acids** (MEYER), A., i, 190.  
 formation of, by the hydrolysis of  
 casein (FISCHER), A., i, 781.  
 from the hydrolysis of silk fibroin  
 (FISCHER and SKITA), A., i, 783.  
 estimation of the nitrogen of, in urine  
 (KRUGER and SCHMID), A., ii, 290.  
 esters (FISCHER), A., i, 192.  
 fatty, conversion of, into the corre-  
 sponding chloro-acids (JOCHER),  
 A., i, 129.  
**Amino-alcohols**, formation of (HENRY),  
 A., i, 16, 68; (STRAUSS), A., i, 17;  
 (MATTHES), A., i, 259, 513.  
 behaviour of (HENRY), A., i, 16.  
**Amino-compounds**, optical inversion of  
 (POPE and HARVEY), T., 85; P.,  
 1900, 206.  
**Amino-mercaptans**, halogen-substituted  
 (EIBNER), A., i, 321.  
**Ammonia**, formation of, by the action of  
 pepsin and trypsin on proteids  
 (DZIERZGOWSKI and SALASKIN), A.,  
 ii, 666.  
 synthetical formation of (BAUR), A.,  
 ii, 550.  
 vapour pressure of aqueous solutions of  
 (PERMAN), T., 718; P., 1901, 46.  
 influence of sodium sulphate on the  
 vapour pressure of aqueous solutions  
 of (PERMAN), T., 725; P., 1901,  
 47.  
 influence of neutral salts on the vapour  
 tension of, in aqueous solutions  
 (GAUS), A., ii, 7.  
 distribution of, between chloroform  
 and water, effect of alkali salts on  
 the- (DAWSON and McCRAE), T.,  
 493; P., 1901, 5.  
 distribution of, between chloroform  
 and aqueous solutions of the alkali  
 earths (DAWSON and McCRAE),  
 T., 1069; P., 1901, 177.  
 distribution of, between chloroform  
 and water, and aqueous copper  
 sulphate and chloroform at varying  
 temperatures (DAWSON and  
 McCRAE), T., 1072; P., 1901, 178.

- Ammonia**, action of, on alloys and on metals at high temperatures (BELLBY and HENDERSON), T., 1245; P., 1901, 190.  
 reaction of, with chlorine (NOYES and LYON), A., ii, 601.  
 action of, on  $\beta$ -chloroallylthiocarbimide (DIXON), T., 554; P., 1901, 49.  
 action of, on oxalacetic acid (FENTON and JONES), T., 96; P., 1900, 205.  
 liquid, action of, on iodine and on iodine and sodamide (RUFF), A., ii, 16.  
 compounds of, with aluminium chloride (BAUD), A., ii, 161, 303.  
 compounds of, with boron sulphide and with boron (STOCK and BLIX), A., ii, 650.  
 combination of, with lithium chloride (BONNEFOI), A., ii, 653.  
 derivatives, conversion of, into ammonium hydroxides in aqueous solutions (BREDIG), A., i, 608.  
 detection of, in water, by mercuric chloride (FERRARO), A., ii, 192.  
 estimation of, in presence of hydroxylamine and nitrite (SULER), A., ii, 637.  
 estimation of, in animal liquids and tissues (NENCKI and ZALESKI), A., ii, 688.  
 estimation of, in urine (FOLIN), A., ii, 575.  
 estimation of, in waters (WINKLER), A., ii, 627.  
 and methylamines, estimation and separation of (QUANTIN), A., ii, 361.
- Ammonio-aluminium chlorides**. See under Aluminium.
- Ammonio-cobalt compounds**. See under Cobalt.
- Ammonio-copper compounds**. See under Copper.
- Ammoniohydorruthenium**, nitroso-compounds, and double salts (BRIZARD), A., ii, 108.
- Ammonio-mercury salts**. See under Mercury.
- Ammonio-nickel salts**. See under Nickel.
- Ammonio-platinum compounds**. See Platinum bases.
- Ammoniotitanium compounds**. See under Titanium.
- Ammonium**, non-existence of, at  $-95^{\circ}$  (RUFF), A., ii, 600, 653.
- Ammonium amalgam** (COEHN), A., ii, 155.
- Ammonium salts**, combination of, with ammonia in aqueous solution (DAWSON and McCRAE), T., 501; P., 1901, 6.
- Ammonium salts**, toxic action of, on plants (COUPIN), A., ii, 122.
- Ammonium bromide**, equivalent of (SCOTT), T., 147; P., 1900, 204.  
 chloride from the Crater of Vesuvius, (MATTEUCCI), A., ii, 63.  
 equivalent of (SCOTT), T., 154; P., 1900, 205.  
 double salt of, with antimony pentachloride (WEINLAND and SCHLEGELMILCH), A., ii, 660.  
 molybdenyl chloride (KLASON), A., ii, 162.  
 titanichloride (ROSENHEIM and SCHÜTTE), A., ii, 244.  
 telluriolate, telluriphosphates and telluriarsenates (WEINLAND and PRAUSE), A., ii, 599.  
 nitrogen iodides (RUFF), A., ii, 16.  
 molybdates (KLASON), A., ii, 162.  
 phosphomolybdate, precipitation of, by molybdate solution containing citric acid (SEYDA), A., ii, 689.  
 nitrate, double salts of, with cerium nitrate (DROSSBACH), A., ii, 102.  
 nitrite, decomposition of (WEGSCHEIDER), A., ii, 384.  
 nitriolpentachloro-osmate (WERNER and DINKLAGE), A., ii, 661.  
 sulphate, double salt of, with plumbic sulphate (ELBS and FISCHER), A., ii, 100.  
 See also Agricultural Chemistry.
- nickel sulphate**, electrochemical behaviour of (PFANHAUSER), A., ii, 538.
- rhodium alum** (PICCINI and MARINO), A., ii, 392.
- persulphate**, action of silver salts on solutions of (MARSHALL), A., ii, 156.  
 oxidising action of, on products of the organism (HUGOUNENQ), A., i, 242.
- nitrosulphate** (DIVERS and HAGA), T., 1094; P., 1901, 164.  
 and ammonium barium imidosulphites (DIVERS and OGAWA), T., 1099; P., 1900, 113; 1901, 163.
- thio-oxyarsenate** and hydrogen thio-oxyarsenate (McLAUCHLAN), A., ii, 552.
- Ammonium organic compounds**, quaternary, formation of (PINNOW), A., i, 411.  
 potassium cyanide (HERTING), A., ii, 534.
- Amperemanometer** (JOB), A., ii, 83, 222.
- Amphopeptone** (SIEGFRIED), A., i, 176; (FRÄNKEL and LANGSTEIN), A., i, 575.  
 preparation of pure (MÜHLE), A., i, 492.

- Amyl alcohol**, use of, in the analysis of fats (EICHORN), A., ii, 48; (HALPHEN), A., ii, 359.  
 esterification of, by nitrophthalic acid and anhydride (MCKENZIE), T., 1139; P., 1901, 186.
- tert.* **Amyl alcohol** (*dimethylethylcarbinol*), action of nitric acid on (KONOWALOFF), A., i, 249.
- Amyl alcohols** in fusel oil, separation of (MARKWALD; MARKWALD and MCKENZIE), A., i, 248.
- Amyl derivatives**, active, rotatory powers of (GUYE), A., i, 442.  
 others and esters, rotation of certain (GUYE), T., 475; P., 1901, 48.  
 mercaptan and sulphide, thermochemistry of (BERTHELOT), A., ii, 146.  
 nitrite, action of, on *o*- and *p*-nitrotoluenes, in presence of sodium ethoxide, and on ethyl crotonate (LAPWORTH), T., 1274; P., 1900, 109.
- Amylamine**, specific heat and latent heat of evaporation of (KAHLENBERG), A., ii, 492.
- $\alpha$ -Amylanhydrazetonebenzil** (JAPP and MELDRUM), T., 1041; P., 1901, 176.
- iso* **Amylanthranilic acid** (MEYER), A., i, 191.
- $\beta$ -Amylbutyric acid**, *dithio*-, ethyl ester, and its  $\alpha$ -mono- and di-methyl and -ethyl derivatives (POSNER), A., i, 704.
- l-iso* **Amylconiine** and its salts (HOHENEMSER and WOLFFENSTEIN), A., i, 606.
- Amyliscrotonic acid**, thio- (POSNER and DEINHARDT), A., i, 704.
- Amylene** ( $\beta$ -methyl- $\beta$ -butylene), action of hypochlorous acid on (KRASSUSKY), A., i, 247.  
 $\gamma$ -chloro- (KRASSUSKY), A., i, 247.
- iso* **Amylethyl phenyliminothiolcarbonate** (WHEELER and DUSTIN), A., i, 25.
- 2-isoAmyl-4-ketodihydroquinazoline** (GOTTHELF), A., i, 765.
- 2-d-Amyl- and 2-isoAmyl-3-nitrophthalic acids** (MCKENZIE), T., 1137; P., 1901, 186.
- p*-**Amyloxyphenyl-carbamide and -thio-carbamide** (SPIEGEL and SABBATH), A., i, 534.
- $\beta$ -Amyloxypropionic acid** (HAMONET), A., i, 187.
- Amylpropionaldehyde** (MOUREU and DELANGE), A., i, 581.
- Amylpropionic acid**. See  $\alpha$ -Octinoic acid.
- $\beta$ -Amylsulphone- $\alpha$ -ethyliscrotonic acid** (POSNER and CLAUDIUS), A., i, 705.
- $\gamma$ -Amylvaleric acid**, *dithio*-, and its ethyl ester (POSNER and DEINHARDT), A., i, 703.
- Amyrol**, fractional distillation of, and **Amyrolin** and its *di*bromide (v. SODEN and ROJAHN), A., i, 159.
- Anæmia** experimentally produced, action of iron in (MULLER), A., ii, 522.  
 during gestation (CHARLIN and GUILLEMONAT), A., ii, 611.
- Anæsthetics**, action of, on dogs and rabbits (WRIGHT), A., ii, 180, 408.  
 influence of, on the respiration of plants (MORKOWIN), A., ii, 331.
- Analcite** from Point Sal, California (FAIRBANKS), A., ii, 168.
- Analysis**, blowpipe, tests in (RICHARDS), A., ii, 471.  
 use of metallic sodium in (PARSONS), A., ii, 423.  
 electrolytic, apparatus for (MARSHALL), A., ii, 190.  
 quantitative, tables for the calculation of (SARTORI), A., ii, 574.  
 method of weighing precipitates without separating them from the liquid (THATCHER), A., ii, 685.  
 spectrum. See under Photochemistry.  
 toxicological, use of chromyl dichloride in destroying organic substances in (PAGEL), A., ii, 39.  
 use of tannic acid for the estimation of alkaloids in (KIPPENBERGER), A., ii, 79.  
 volumetric, modification of the man-ganimetric method in (GAILHAT), A., ii, 420.
- Andalusite**, constitution of (ZULKOWSKI), A., ii, 169.
- Andromedotoxin** (ARCHANGELSKI), A., i, 734.
- Andropogon muricatus*, oil of (THEULIER), A., i, 397.
- Anethole**, constitution of (BÉHAL and TIEFFENEAU), A., i, 273.  
 action of iodine and yellow mercuric oxide on (BOUGAULT), A., i, 383, 392.  
 oxidation of, into anisic acid (BOUGAULT), A., i, 324.  
 colour reaction of (CHAPMAN), A., ii, 77.
- Angelic acid**. See Pentenoic acid.
- Angostura bark**, oil and alkaloids from (HARTWICH and GAMPER), A., ii, 70.
- Anhalamine**, formula of, and its salts and benzoyl derivatives (HEFFTER), A., i, 736.
- Anhalonidine**, constitution of, and its benzoyl derivatives (HEFFTER), A., i, 737.

- Anhydracetonebenzil**, homologues of (JAPP and MELDRUM), T., 1024; P., 1901, 174.
- Anhydrides**, preparation of simple and compound (TSCHITSCHIBABIN), A., i, 536.  
preparation of, by the aid of tertiary amines (WEDEKIND), A., i, 499.  
action of zinc ethyl on (GRANICHSTÄDTEN and WERNER), A., i, 518.  
higher, preparation of the (KRAFFT and ROSINY), A., i, 113.  
mixed (SEVERIN), A., i, 385; (KNOLL & Co.), A., i, 703.  
simple and mixed, and action of phenol and phenylhydrazine on (AUTENRIETH), A., i, 185.
- Anhydrite**, formation of, from gypsum (VAN'T HOFF, HINRICHSSEN, and WEIGERT), A., ii, 506.
- Anhydro-2:4-dimethyl- $\psi$ -quinol-*p*-nitrophenylhydrazone and -semicarbazone** (BAMBERGER and BRADY), A., i, 143.
- Anhydrodimethyltetramethylenetricarboxylic acid** (PERKIN and THORPE), T., 770.
- Anhydro-*p*-ethoxyaminobenzyl alcohol** (GOLDSCHMIDT), A., i, 322.
- Anhydroformaldehydeaniline** hydrogen and sodium hydrogen sulphites (EIBNER), A., i, 377.
- Anhydro-*p*-nitrobenzeneazaoctonedicarboxylic acid**, and its ethyl ester and salts (BÜLOW and HÖPFNER), A., i, 240.
- Anhydrotetronic acid**, condensation of, with aldehydes (WOLFF), A., i, 284.
- Anil**, chloro- and bromo-, compounds of, with pyridine and 3-methylpyridine (IMBERT), A., i, 651.
- Anilodiacetic-*o*-carboxylic acid**, and its trimethyl ester, and the action of sodium ethoxide on the ester (VORLÄNDER and MUMME), A., i, 83.
- Anilic acid**, bromo-, chloro-, and nitro-, energy of (COFFETTI), A., i, 29.  
bromo- and chloro-, and their alkali salts, absorption spectra of (FIORINI), A., ii, 367.  
chloro-, thermochemistry of (VALEUR), A., i, 154.
- Anilic acid benzoquinone**, nitro- (SCHMIDT), A., i, 88.
- Aniline**, new method of preparing (SABATIER and SENDERENS), A., i, 638.  
new synthesis of (JAUBERT), A., i, 320.  
latent heat of vaporisation and specific heat of (LUGININ), A., ii, 145.  
composition of the vapour phase of the systems water and, and water, phenol, and (SCHREINEMAKERS), A., ii, 57.
- Aniline**, acetylation of (SUDBOROUGH), T., 536; P., 1901, 45.  
oxidation of (BÖRNSTEIN), A., i, 375.  
and its mono-, di-, and tri-substituted derivatives, action of acetylchloroanino-2:4-dichlorobenzene on (CHATTAWAY and ORTON), T., 464; P., 1901, 38.  
condensation of, with isobutaldol and isobutaldehyde (FRIEDJUNG and MOSSLER), A., i, 641.  
action of, on  $\beta$ -chloroallylthiocarbimide (DIXON), T., 557; P., 1901, 49.  
action of, on ethyl acetonedicarboxylate (BESTHORN and GARBEN), A., i, 78.  
action of methylene chlorohydrin on (GRASSI-CRISTALDI and SCHIAVOLENI), A., i, 55.  
interaction of, with nitrobenzene in presence of alkalis (WOHL and AUE), A., i, 612.  
action of, on oxalacetic acid (FENTON and JONES), T., 97; P., 1900, 205.  
interaction of, with *p*-tolylurethane (DIXON), T., 104; P., 1900, 208.  
compounds of, with metallic salts (TOMBECK), A., i, 135, 263.  
bismuth chlorides and antimony chlorides and iodide (SCHIFF), A., i, 375.  
chloroacetyl, phenylsulphonacetyl, *p*-tolylsulphonacetyl, thiodiglycolyl, sulphonodiacyl, cyanoacetyl and thiocynoacetyl derivatives of (GROTHE), A., i, 79, 80.  
titanichloride (ROSENHEIM and SCHÜTTE), A., ii, 245.
- Aniline**, 2:6-dibromo-, acetylation of (SUDBOROUGH), T., 541; P., 1901, 45.  
*o*-chloro-, preparation of (CHATTAWAY and ORTON), T., 469; P., 1901, 39.  
*p*-chloro-, action of amidosulphuric acid on (PAAL), A., i, 693.  
isomeric chlorobromo-derivatives of (CHATTAWAY and ORTON), T., 816; P., 1901, 124.  
formation of (CHATTAWAY and ORTON), T., 822; P., 1901, 125.  
chloro*di*bromo- and *dichlorobromo*-derivatives of (HURTLEY), T., 1295; P., 1901, 192.  
nitro-, reduction of, by hyposulphurous acid (GOLDBERGER), A., i, 23.  
*o*- and *p*-nitro-, electrolytic reduction of (ROHDE), A., i, 136.
- Anilines**, replacement of bromine by chlorine in (CHATTAWAY and ORTON), T., 822; P., 1901, 125.  
substituted, some reactions of (OECHSNER DE CONINCK), A., i, 80.

- Anilineaminosulphonic acid**, *p*-chloro- (PAAL), A., i, 693.
- Aniline-black** and its reactions (BORNSTEIN), A., i, 399.
- Aniline-orange**, detection of, in milk (LYTHGÖE), A., ii, 139.
- Anilinesulphonic acids**, *p*-chloro- and their salts (PAAL), A., i, 693.
- Aniline-*o*- and -*p*-thiosulphonic acids** (CLAYTON ANILINE CO.), A., i, 694.
- $\beta$ -Anilinoacrylic acid**,  $\alpha$ -cyano-, esters (DE BOLLEMONT), A., i, 131.
- Anilinobenzene**, bromodinitro- (JACKSON and COHOE), A., i, 585.
- Anilindiacetic acid**, oxidation of (VORLANDER), A., i, 454; (VORLANDER and MUMME), A., i, 463.
- Anilindibenzoylthane** (PAAL and SCHULZE), A., i, 154.
- Anilino-4:5-dimethylpyrimidines**, 6- and 2-, and their amino-derivatives and salts (SCHLENKER), A., i, 763.
- 3-Anilindiphenylfluorindine** and its hydrochloride (KEHRMANN and GUGGENHEIM), A., i, 422.
- $\beta$ -Anilino-glutaconic acid**, ethyl ester and its anilide (BESRHORN and GARBEN), A., i, 78.
- Anilino-guanidine** and its isomeride, reactions of, and compound of, with ethyl acetoacetate (PELLIZZARI and RONCAGLIOLI), A., i, 768.
- Anilinomethylenedihydroisophorone** (FARBWERKEVORM. MEISTER, LUCIUS, & BRUNING), A., i, 692.
- Anilinomethylmethylenecyclohexanone** (FARBWERKEVORM. MEISTER, LUCIUS, & BRUNING), A., i, 692.
- 5-Anilino-7-methylnaphthaphenazonium salts**, 9-chloro- (KEHRMANN and MULLER), A., i, 419.
- Anilino-oxalyldimethylacetoacetic acid**, methyl ester (CONRAD), A., i, 65.
- Anilino-cyclopentene** and its isomeride, and their salts, and its acetyl and benzoyl derivatives (NOELDECHEN), A., i, 61.
- Anilinophenylthiodiazole** and its silver derivative (YOUNG and EYRE), T., 60; P., 1900, 189.
- Anilinophosphoryl chloride** (CAVEN), P., 1901, 27.
- 2-Anilino-5-isopropyl-1:4-benzoquinone**, 3:6-dibromo- (HOFFMANN), A., ii, 474.
- Anilino-coposafraanine** and chloride, chloro- (KEHRMANN and GUGGENHEIM), A., i, 421.
- Anilino-*p*-toluido-phosphoric acid**, ethyl ester, and -phosphoryl chloride (CAVEN), P., 1901, 26.
- 4-Anilino-1-*p*-tolylurazole** (BUSCH and GROHMANN), A., i, 617.
- Anilopyrine** and action of nitric acid and of methyl iodide on (MICHAELIS and GUNKEL), A., i, 351.
- Aniltrimethylsuccinic acids**, *d*- and *l*- (PAOLINI), A., i, 253.
- Animal charcoal** (*bone black*), sulphides in (STOLLE), A., ii, 154.  
detection of mineral phosphates in (V. LORENZ), A., ii, 193.  
heat, influence of digestion on (REICHERT), A., ii, 28.  
juices and tissues, chemico-physical relations of (OKER-BLOM), A., ii, 326, 520.  
liquid, obtained by tapping, composition of an (MALMÉJAC), A., ii, 520.  
liquids and tissues, estimation of ammonia in (NENCKI and ZALESKI), A., ii, 688.
- Animals**, influence of sterilised air on (KIJANITZIN), A., ii, 115.  
starving, properties of pancreatic juice in (WERTHEIMER; CAMUS and GLEY), A., ii, 324.
- iso***Anisaldoxime** mesityl ether (BAMBERGER and RISING), A., i, 142.
- Anishydroxamic acid** (ANGELICO and FANARA), A., i, 708.
- Anisic acid**, conversion of anethole into, by oxidation (BOUGAULT), A., i, 324.
- o*-**Anisidine**, nitro-derivatives, and their acetyl derivatives (FREYSS), A., i, 321.  
and their benzoyl derivatives, constitution of (MELDOLA and EYRE), P., 1901, 133.  
4:5-dinitro-, constitution and diazotisation of (MELDOLA and EYRE), T., 1076; P., 1901, 131, 185.
- Anisole**, latent heat of vaporisation and specific heat of (LUGININ), A., ii, 145.  
3:4:6-triamino-, and its acetyl derivative, and the diphenylazines from (MELDOLA and EYRE), T., 1076; P., 1901, 131, 185.
- Anisylanilinourazole** and its isomeride (BUSCH), A., i, 489.
- Anisylmercuric iodides** (DIMROTH), A., i, 440.
- Anisyl methyl ketone**, selenium derivative of (KUNCKELL and ZIMMERMANN), A., i, 215.
- Anisylideneacetophenone**, bromo-, and its compounds with ethyl, methyl, and propyl alcohols (POND and SHOFFSTALL), A., i, 35.
- Anisyl nitro-formaldehydophenylhydrazone** and -methane (BAMBERGER and SCHEUTZ), A., i, 548.
- o*-**Anisylphenyldiguanide** and its nitrate (CRAMER), A., i, 772.

- Ankerite** from Magdeburg (FAHRENHORST), A., ii, 248.
- Annelids**, respiration in (BOUNHIOL), A., ii, 517.
- Anniversary dinner**, P., 1901, 75.
- Annual General Meeting**, T., 871 ; P., 1901, 70.
- Anorthite** crystals from Franklin Furnace, New Jersey (WARREN), A., ii, 455.
- Anorthoclase** from Christiania district (BRÖGGER), A., ii, 170.
- Anthophaein**, the brown colouring matter of flowers (MÖBIUS), A., i, 221.
- Anthracene**, action of sulphur monochloride on (LIPPMANN and POLLAK), A., i, 690.  
 derivatives, dyeing properties of (LIEBERMANN), A., i, 478 ; (BUNTROCK), A., i, 602.  
 nitro-acetate and -chloride (DIMRÖTH), A., i, 197.  
 dithiochloride (LIPPMANN and POLLAK), A., i, 690.
- Anthracene**, 10-nitro- (MEISENHEIMER), A., i, 135 ; (DIMROTH), A., i, 197.
- Anthrachryson-2:6-disulphonic acid**, 4:8-diamino-, formation of (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 729.
- Anthradiquinones** and their imides, transformation of, into hydroxyanthraquinones and their amino-derivatives (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 729.
- Anthragallol**, autooxidation products of (BAMBERGER and PRAETORIUS), A., i, 730.
- 10-Anthramine** and its acetyl derivative (MEISENHEIMER), A., i, 135.
- Anthranilic acid** (*o*-aminobenzoic acid), action of formaldehyde and nascent hydrogen cyanide on (KÖHNER), A., i, 537.  
 derivatives (MEHNER), A., i, 470, 644.  
 conversion of, into indigo (ERDMANN), A., i, 536.
- Anthranilic acid**, esters (GOLDSCHMIDT), A., i, 709.  
 methyl ester (E. and H. ERDMANN), A., i, 709.  
 action of formaldehyde on (MEHNER), A., i, 470 ; (ERDMANN), A., i, 536, 591.  
 estimation of, in essential oils (HESSE and ZEITSCHEL), A., ii, 209.
- Anthranilic acid**, 6-chloro-, and its hydrochloride (COHN), A., i, 637.  
 3:4-dichloro- (FERRAND), A., i, 637.
- Anthranilic acid** and its 3:6-dichloro- and *di*bromo- (BAMBERGER and DEMUTH), A., i, 392.  
 3:5:6-trichloro- (GRAEBE and ROSTOWZEW), A., i, 544.
- Anthranilidoacetoneitrile**. See Methylaminobenzoic acid, *o*-cyano-.
- Anthraphenone**, preparation of (LIPPMANN and KEPPICH), A., i, 37 ; (LIPPMANN and POLLAK), A., i, 728.  
 nitro- (LIPPMANN and KEPPICH), A., i, 37.
- Anthrapurpurin** diacetate (KNOLL & Co.), A., i, 730.
- Anthraquinone** derivatives, dyeing properties of (LIEBERMANN), A., i, 478.
- Anthraquinone**, 1:2:4-trichloro- (GRAEBE and ROSTOWZEW), A., i, 544.  
*o*-nitro-, electrolytic reduction of, to the *o*-amino-derivative (MÖLLER), A., i, 598, 646.  
 1:5- and  $\alpha$ -*di*-nitro-, electrolytic reduction of (MÖLLER), A., i, 646.
- $\beta$ -Anthraquinonesulphone-methylanilide** and -*n*-heptylamide (HINSBERG), A., i, 128.
- Anti-coagulating agents** (PICK and SPIRO), A., ii, 117.
- Antimony**, atomic weight of (FRIEND and SMITH), A., ii, 604.  
 conversion of arsenic into (FITTICA), A., ii, 236, 313 ; (ARNOLD and MURACH), A., ii, 236.  
 conversion of phosphorus into (FITTICA), A., ii, 59.  
 melting point of (HOLBORN and DAY), A., ii, 85.  
 localisation and dissemination of, in the organism (POUCHET), A., ii, 673.
- Antimony alloy** with aluminium, density of (VAN AUBEL), A., ii, 453.
- Antimony tribromide**, cryoscopic experiments with (GARELLI and BASANI), A., ii, 373.  
 and trichloride, dissociating power and latent heat of fusion of (TOLLOCZKO), A., ii, 437.  
 caesium bromide and chloride (WELLS and METZGER), A., ii, 661.  
 trichloride and triiodide, compounds of, with aniline (SCHIFF), A., i, 375.  
 pentachloride, dissociation of (NOTHOMB), A., ii, 88.  
 double salts of, with the chlorides of ammonium, calcium, magnesium and potassium (WEINLAND and SCHLEGELMILCH), A., ii, 660.  
 caesium fluorides and iodide (WELLS and METZGER), A., ii, 514.  
 haloids, action of boron bromide on (TARBLE), A., ii, 153.



- Antimony** hydride, preparation of pure (Strock and DOHT), A., ii, 556.
- Antimonic acid**, estimation of, iodometrically (ROHMER), A., ii, 479.
- Tri- and Tetra-antimonic acids** and their salts (DELACHROIX), A., ii, 318.
- Antimony, detection and estimation of**—  
 detection of, in presence of sulphites, etc. (SMITH), A., ii, 279.  
 estimation of, in cupreous materials (GIBB), A., ii, 345.  
 estimation of, in presence of tin (ROHMER), A., ii, 479.  
 separation of, electrolytically, from tin (OST and KLAPPROTH), A., ii, 695.
- Antimony-phosphorus-arsenic group**, replacements in the (KRAFFT and NEUMANN), A., ii, 235.
- Antipeptone** (SIEGFRIED), A., i, 57, 176; (KUTSCHER), A., i, 108, 354.
- Antipyrine** (1-phenyl-2:3-dimethylpyrazolone), derivatives of (EBERT and REUTER), A., i, 294.  
 excretion of (LAWROFF), A., ii, 463.  
 detection of, in urine (PETERMANN), A., ii, 293.
- Antipyrine, thio-**. See Thiopyrine.
- Antiseptic**, sodium mercuriphenoldisulphonate as an (A. and L. LUMIÈRE and CHEVROTIER), A., i, 244.
- Apatite** from Ceylon (SCHIFFER), A., ii, 111.
- Apigenin**, an isomeride of (v. KOSTANECKI and WEBEL), A., i, 479.  
 acetyl and methyl derivatives of (CONTI and TESTONI), A., i, 399.  
 methyl ether and its diacetyl derivative (VONGERICHTEN), A., i, 40.
- Apiin** and its hydrolysis (VONGERICHTEN), A., i, 646.  
 hydrolysis of (CONTI and TESTONI), A., i, 398.  
 action of aqueous potassium hydroxide and methyl iodide on, and its methyl ether (VONGERICHTEN), A., i, 40.
- Apiole**, a reaction of (JORISSEN), A., ii, 205.
- Apiose** and its osazone and *p*-bromophenylosazone (VONGERICHTEN), A., i, 646.
- Apiosedextrosephloroglucinol** and its hydrolysis and the action of benzene-diazonium chloride on (VONGERICHTEN), A., i, 647.
- Apnoea**, cause of (FREDERICQ), A., ii, 174.
- Apophyllite** from Sulitelma, Scandinavia (HENNICQ), A., ii, 112.
- Apples**. See Agricultural Chemistry.
- l*-Arabinose**, action of *Bacillus coli communis* on (HARDEN), T., 624; P., 1901, 58.
- Arabinoses**, behaviour of, in the organism (SALKOWSKI; NEUBERG and WOHLGEMUTH), A., ii, 521.
- l*-Arabonic acid**, oxidation of (RUFF and MEUSSER), A., i, 449.
- Aragonite**, relation of, to conchite (KELLY), A., ii, 168; (BRAUNS), A., ii, 395.  
 simple method of distinguishing calcite and (MEIGEN), A., ii, 692.
- Arenicola larvæ**, action of various salts on ciliary and muscular movements in (LILLIE), A., ii, 179.
- Arginine**, constitution and oxidation of (BÉNECH and KUTSCHER), A., i, 403; (KUTSCHER), A., i, 561.  
 occurrence of, in the spleen (v. GULEWITSCH and JOCHELSOHN), A., ii, 29.
- d*-Arginine**, conversion of, into its inactive isomeride (KUTSCHER), A., i, 561.
- Argon**, separation and spectra of (LIVING and DEWAR), A., ii, 598.  
 refraction of (RAMSAY), A., i, 141.  
 physical properties of (RAMSAY and TRAVERS), A., ii, 237.
- Argonides**, presence of, in crystalline rocks (GAUTIER), A., ii, 398.
- Aromatic compounds**, bromination of (BRUNER), A., ii, 441.
- Arrhenatherum bulbosum*, graminin in the root swellings of (HARLAY), A., ii, 267.
- Arsenic**, preparation of, free from antimony (ORLOFF), A., ii, 313.  
 alleged conversion of phosphorus into (CHRISTOMANOS; FITTICA), A., ii, 59.  
 alleged conversion of, into antimony (FITTICA), A., ii, 236, 313; (ARNOLD and MURACH), A., ii, 236.  
 in the organs of the body (HÖDLMOSER), A., ii, 673.
- Arsenic tribromide**, dissociating power of (TOLLOCZKO), A., ii, 437.  
 cryoscopic experiments with (GARELLI and BASSANI), A., ii, 373.  
 haloids, action of boron bromide on (TABILE), A., ii, 153.  
 trihydride (*arsine, hydrogen arsenide*), heat of formation of (DE FORCRAND), A., ii, 641.  
 action of, on boron bromide (STOCK), A., ii, 382.
- Arsenides**, presence of, in crystalline rocks (GAUTIER), A., ii, 398.
- Arsenic triiodide**, commercial, and test for (DUPOUY), A., ii, 17.

**Arsenic:—**

**Arsenious oxide**, rate of solution of (DRUCKER), A., ii, 230, 376.  
behaviour of, towards permanganate (KÜHLING), A., ii, 237.

**Arsenic acid**, acidimetry of (ASTRUC and TARBOURIECH), A., ii, 552.

**Thio-oxyarsenic acids**, preparation of (McCAY), A., ii, 95; (WEINLAND and LEHMANN), A., ii, 313; (McLAUCHLAN), A., ii, 552.

**Thioarsenates**, detection of, in presence of thio-oxyarsenates (WEINLAND and LEHMANN), A., ii, 314.

**Arsenic disulphide**, action of hydrogen on (PÉLABON), A., ii, 313.

*pentasulphide*, action of sodium ethoxide and alkalis on (WEINLAND and LEHMANN), A., ii, 313.

action of alkali hydroxides and alkaline earths on (McCAY), A., ii, 95; (WEINLAND and LEHMANN), A., ii, 313.

**Arsenic, detection, estimation, and separation of:—**

Gutzeit's test for (BIRD), A., ii, 576.  
modification of Gutzeit's test for (DOWZARD), T., 715; P., 1901, 92.

effect on the Marsh test of some commercial products containing selenium and tellurium (BERRY), A., ii, 423.  
influence of selenium on the tests for (ROSENHEIM), A., ii, 531.

test for, by *Penicillium brevicaulis* (MARPMANN), A., ii, 125; (GALLI-VALERIO and STRZYZOWSKI), A., ii, 194.

test for, in beers and brewing materials (CHAPMAN; ALLEN; REPORT OF THE COMMISSION TO THE MANCHESTER BREWERS' CENTRAL ASSOCIATION), A., ii, 125.

detection of, in beers, brewing materials, and food (THOMSON and SHENTON), A., ii, 345.

detection of, in the presence of sulphites, etc. (SMITH), A., ii, 279.

detection of, in waters (GOSIO), A., ii, 193.

detection of nitrogen in (CHRISTOMANOS), A., ii, 59; (FITTICA), A., ii, 59, 236, 313; (ARNOLD and MURACH), A., ii, 236.

estimation of (DUCRU), A., ii, 73, 243.

estimation of, as ammonium magnesium arsenate (DUCRU), A., ii, 125.

estimation of, in beer (JONES; RYDER and GREENWOOD), A., ii, 280.

estimation of, in coal and coke (SMITH and JENKS; ARCHBUTT and JACKSON), A., ii, 476; (CHAPMAN), A., ii, 690.

**Arsenic, estimation and separation of:—**

estimation of, in cupreous materials (GIBB), A., ii, 345.

estimation of, in London purple (HAYWOOD), A., ii, 126.

estimation of, in tiles, dust, &c., from malt kilns (FAIRLEY), A., ii, 577.

estimation of, in Paris green (AVERY and BEANS), A., ii, 346, 623.

separation of (ROHMER), A., ii, 194.

**Arsenic-antimony-phosphorus group**, replacements in the (KRAFFT and NEUMANN), A., ii, 235.

**Arsenic mould** (*Penicillium brevicaulis*) as a test for arsenic (MARPMANN), A., ii, 125; (GALLI-VALERIO and STRZYZOWSKI), A., ii, 194.

gas evolved by (BIGINELLI), A., i, 20.

use of, for the detection of arsenic in waters (GOSIO), A., ii, 193.

**Arsenical gas** from wall-paper (BIGINELLI), A., i, 20.

**Artemisin** and its salts, oxime, and compound with chloroform (BERTOLO), A., i, 718.

*Arum maculatum*, chemical processes in the juice of (HAHN), A., ii, 121.

**Aryl carbonates**, preparation of (FARBEN-FABRIKEN VORM. F. BAYER & Co.), A., i, 662.

potassium sulphates, preparation of (VERLEY), A., i, 143.

**Arylamines**, acetylation of (SUDBOROUGH), T., 533; P., 1901, 45.

*isodiazotisation* of (BAMBERGER and RÜST), A., i, 171.

**Arylhydroxylamines**, mechanism of the conversion of, into aminophenols (BAMBERGER), A., i, 140, 203.

**Arylthiosulphonates** of organic bases (TRÖGER and LINDE), A., i, 337.

**Asbestos** from Alilovei, Sauskimost (GRIMMER), A., ii, 561.

**Ashes**, estimation of phosphoric acid in (v. LORENZ), A., ii, 278.

See also Agricultural Chemistry.

**Asparagine**, formation of, in plants (SCHULZE), A., ii, 184, 332, 467.

oxidation of (JOLLES), A., i, 262.

as a foodstuff (ROSENFELD), A., ii, 177.

**Asparaginic acid**, reduction of, by *Bacillus coli communis*, in presence of glucose and mannitol (HARDEN), T., 623; P., 1901, 58.

**Aspartic acid**, free, in *Tritonium nodosum* (HENZE), A., ii, 178.

oxidation of (JOLLES), A., i, 262.

**Aspartic acid**, *l*-diethyl ester (FISCHER), A., i, 193.

- Aspergillus niger*, action of copper and zinc on (RICHTER), A., ii, 567.  
protease of (MALFITANO), A., i, 58.  
tannase of (FERNBACH; POTTEVIN), A., i, 179.
- Asphalts**, comparative method for determining the fusing points of (MABERY and SIEPLEIN), A., ii, 352.
- Asphyxia**, influence of, on the glycogenic function of the liver (SEEGER), A., ii, 522.
- Aspicilin** (HESSE), A., i, 152.
- Aspidospermine**, reaction of, with perchloric acid (HAEUSSERMANN and SIGEL), A., ii, 124.
- Aspirin**, physiological action of (SINGER), A., ii, 408.
- Atmospheric air**, volumetric composition of; lecture experiment (ROSENFELD), A., ii, 547.  
electrical conductivity of (WILSON), A., ii, 490.  
ionisation of (WILSON), A., ii, 435.  
combustible gases of (GAUTIER), A., ii, 14, 92, 171, 232.  
separation of hydrogen, helium, neon, krypton, and xenon from (DEWAR), A., ii, 597.  
distribution of sulphuric acid in (OST), A., ii, 15.  
liquid, surface tension of (GRUNMACH), A., ii, 646.  
gaseous exchanges between plants and (SCHLÖSING), A., ii, 31.  
expired, toxicity of (FORMÁNEK), A., ii, 174.  
sterilised, influence of, on animals (KIJANITZIN), A., ii, 115.  
detection of carbon monoxide in (ZUNTZ and KOSTIN), A., ii, 280; (KOSTIN), A., ii, 281.  
estimation of, in water (PELLET), A., ii, 75.  
estimation of carbon dioxide in (HALDANE), A., ii, 477.
- Atomic weight**, relation between atomic volume, melting point and (BAYLEY), A., ii, 497.  
and magnetism (ERRERA), A., ii, 83.  
of antimony (FRIEND and SMITH), A., ii, 604.  
of calcium (HERZFELD and STIEPEL), A., ii, 239.  
of indium (BENOIST), A., ii, 308.  
of lanthanum (BRAUNER and PAVLIČEK), P., 1901, 63.  
of neodymium, (BRAUNER), P., 1901, 66.  
of nitrogen (SCOTT), T., 147; P., 1900, 204.  
of praseodymium (BRAUNER), P., 1901, 65.
- Atomic weight** of tellurium (STEINER), A., ii, 236.  
of uranium (ALOY), A., ii, 244.  
of ytterbium and yttrium (G. and E. URBAIN), A., ii, 161.
- Atomic weights**, report of the American Committee on (CLARKE), A., ii, 379.  
the standard of (BRAUNER), A., ii, 231; (ERDMANN), A., ii, 379.  
tendency of, to approximate to whole numbers (STRUTT), A., ii, 308.  
determination of, based on the laws of the transparency of matter for X-rays (BENOIST), A., ii, 215, 216, 308; (HÉBERT and REYNAUD), A., ii, 215.
- Atoms**, theory of the behaviour of (MARTIN), P., 1901, 169.
- Atropine**, formation of, from hyoscyamine (MAZZUCHELLI), A., i, 161.  
relation of, to hyoscyamine (GADAMER), A., i, 605.  
decomposition of, in the organism (WIECHOWSKI), A., ii, 615.  
microchemical reaction of (SCHOORL), A., ii, 707.
- Augite** from Point Sal, California (FAIRBANKS), A., ii, 168.  
from Roumania (PONT), A., ii, 26.
- Autofermentation**. See under Fermentation.
- Autolysis** of the lung (JACOBY), A., ii, 670.
- Auto-oxidation**. See Oxidation.
- Auxochromic groups** containing tertiary nitrogen, law of (LEMOULT), A., i, 232, 351; (BAYRAC and CAMICHEL; CAMICHEL and BAYRAC), A., i, 296.
- Avitellitic acid** and its salts (LEVENE and ALSBERG), A., i, 300.
- Avogadro's hypothesis** (PONSOT), A., ii, 542.
- Azelaic acid** (*heptanedicarboxylic acid*) (LE SUEUR), T., 1314; P., 1900, 91.
- Azimethine derivatives**, formation of (WALLER), A., i, 694.
- Azine**,  $C_{10}H_{14}N_4$ , obtained by heating diaminomethylpyrimidine with benzil (GABRIEL and COLMAN), A., i, 428.  
derivatives, synthesis of, by means of acetylaminonaphthalic acid (KEHRMANN and BARCHÉ), A., i, 47.
- Azobenzene**, 2:2':4:4'-tetrachloro- (ZINCKE), A., i, 778.  
2:4:6:2':4':6'-hexachloro- (CHATTAWAY and ORTON), T., 467; P., 1901, 39.  
*di-p*-nitro- (DE BRUYN and BLANKSMA), A., i, 460; (BLANKSMA), A., i, 461.
- Azo-compounds**, amino-, characterisation of (MOHLAU and HEINZE), A., i, 432.

**Azo-compounds.** See preceding entries

and also:—

Aldazine,  $C_{12}H_{20}N_2$ .*o*-Aldoximophenylazo-*o*-aldoximo-anilide.Anhydro-*p*-nitrobenzeneazoacetonedicarboxylic acid.

Azobenzene.

*o*-Azodiphenyl.

Azotoluenes.

3-Azo-2-toluidine.

Azoxybenzene.

*o*-Azoxydiphenyl. $\alpha$ -Azoxy-naphthalene.*o*-Azoxytoluene.

Azoxyxylenes.

Benzaldazines.

Benzeneazoacetonedicarboxylic acid.

Benzeneazoaminomethylazimino-toluene.

Benzeneazo-*o*-bromo-*p*-cresol.Benzeneazo-*p*-cresol.

4-Benzeneazo-1:3 (or 5)-diphenyl-5 (or 3)-benzylpyrazole.

Benzeneazohydroxymethylphenylmercuric acetate.

Benzeneazohydroxyphenylmercuric salts.

Benzeneazohydroxytolualdehydes.

Benzeneazohydroxyxylidines.

Benzeneazo- $\alpha$ -ketoglutarimide.Benzeneazo- $\beta$ -naphthol.

Benzeneazonaphthylleucauramines.

Benzeneazo-*o*-nitrosalicylic acid.

Benzeneazophenylacetylacetophenone.

Benzeneazophenylleucauramine.

Benzeneazophenyliminomethanethio-methane.

Benzeneazopyrrole.

Benzene-4-azoresorcinol.

Benzeneazoresorcyllaldehyde.

Benzeneazosalicylic acid.

Benzenediazohydroxylamino-*p*-toluene.

Benzenediazonium chloride.

Benzo- $\beta$ -ketopentamethyleneazincarboxylic acid.

Bisazoxyacetic acid.

Bisazoxymethane.

2:4-Bisbenzeneazoresorcinol.

Bisdiazomethane.

Carbaminoazocyanide.

Carbaminoiminoazoimide.

1-Carbamino-5-pyrazolone-3-*p*-nitrobenzeneazoacetic acid.

Cumarophenazine.

Dianisyl-disazo- $\alpha$ -naphthol.

Diazoacetic acid.

*iso*Diazoacetic acid.

Diazoaminobenzene-2-carboxylic acid.

Diazoaminobenzene-2:2'-dicarboxylic acid.

**Azo-compounds.** See:—*o*-Diazoaminobenzoic acid.

Diazobenzene.

Diazobenzene-phloroglucinol methyl ether.

Diazobenzenesulphonic acid.

3-Diazocarbazole.

Diazo-chlorides.

Diazo-compounds.

2-Diazo-fluorene.

2-Diazo-fluorenone.

Diazoguanidine.

Diazomethane.

*iso*Diazomethane.

Diazonium chlorides.

Diazoxide.

Dibenzoylazoxime.

Di- $\psi$ -cumylpiperazine.4-Diethylaminophenyl- $\mu$ -cyanoazomethine-4'-nitrophenyl.

Dihydrotetrazines.

2:5-Dimethylbenzaldazine.

Dimethyldiazoaminotoluene.

Dimethyl-*m*-toluidineazobenzene.Dimethyl-*m*-toluidineazo-*p*-phenetole.Dimethyl-*m*-toluidineazotoluenes.

Dinaphthaphenazine-furan and -oxazine.

Dinaphthylsulphonebis-diazo-diphenyl and -ditolyl.

Diphenylazines.

Diphenyldiisobutylpiperazine.

Diphenyldisazo- $\alpha$ -naphthol.

3:6-Diphenylpyridazine.

Diphenylsulphonebis-diazo-diphenyl and -ditolyl.

Ditolylsulphonebis-diazo-diphenyl and -ditolyl.

Dixylpiperazine.

Ethoxycoumarophenazine.

*m*-Ethylaminoazobenzenesulphonic acid.4-Ethylaminophenyl- $\mu$ -cyanoazomethinephenyl.

Glutaric diazoimide.

Guanazoguanazole.

Hydrazobenzene.

Hydrazodiphenyls.

Hydrazotoluene.

5-Hydroxy-6-anilino- $\alpha\beta$ -naphthaphenazine.

Hydroxyazoaldehydes.

Hydroxyazobenzenes.

Hydroxyazo-compounds.

*m*-Hydroxy-*o*-azotoluene.*o*-Hydroxybenzeneazo-*p*-toluene.

Hydroxydinaphthaphenazine oxide.

2-Hydroxy-1-methyl-3-ketophenylpropenyl-5-benzeneazobenzene.

2-Hydroxy-5-methylolbenzaldazine.

Hydroxy-naphthaphenazines.

*o*-Methoxyazobenzene.

**Azo-compounds.** See:—

- 4-Methylaminophenyl- $\mu$ -cyanoazomethinephenyl.
- Methylbenzo- $\beta$ -ketopentamethylene-azinecarboxylic acid.
- Methylcoumarophenazine.
- Methylenebishydrazobenzene.
- 2-Methyl-5-ethyl- $\psi$ -indophenazine.
- Methyl- $\alpha\beta$ -naphthazine.
- 4-Methylumbelliferone-8-diazoanhydride.
- 4-Methylumbelliferone-8-diazosulphonic acid.
- $\alpha$ -Naphthaleneazo-*o*-cresol.
- $\beta$ -Naphthaleneazodiacetylsuccinic acid.
- Naphthaleneazophenol.
- $\alpha$ -Naphthaleneazothymol.
- Naphthaphenazines.
- 1:4:7:10-Naphthattetrazine-2:3:8:9-tetracetic acid.
- $\beta$ -Naphtholazodiphenylhydrazonocyanacetic acid.
- $\beta$ -Naphthol- $\beta$ -azophenylbenziminazoles.
- 5-isoOxazolone-3-*p*-nitrobenzeneazocetic acid.
- o*-Oxyazo-compounds.
- Phenazine.
- Phenylaziminobenzene.
- Phenyl-3-methyl-4-benzeneazo-5-pyrazolone.
- 1-Phenyl-4-*p*-nitrobenzeneazo-5-pyrazolone-3-acetic acid.
- 1-Phenyl-5-pyrazolone-3-*p*-nitrobenzeneazocetic acid.
- Sebacic diazoimide.
- Suberic diazoimide.
- 5-*p*-Sulphobenzeneazo-2-hydroxy-*m*-tolualdehyde.
- s*-Tetramethyl*di*nitroazoxymethane.
- 1:2:4:5-Tetraphenylhexahydro-1:2:4:5-tetrazine.
- Tetrazoditolyldisulphonic acid.
- p*-Toluencazodiacetylsuccinic acid.
- Tolueneazoimides.
- Tolueneazo- $\beta$ -naphthols.
- Tolueneazo-*o*-nitrophenols.
- Tolueneazophenols.
- p*-Tolueneazo-*p*-tolyl-auramine and leucauramine.
- Toluenediazoaminobenzoic acids.
- p*-Toluenediazohydroxylaminobenzene.
- m*-Toluidinoazobenzoic acid.
- p*-Triazacetanilide.
- m*-Triazacetophenone.
- Triazoanisoles.
- Triazobenzaldehydes.
- Triazobenzaldoxime.
- Triazobenzoic acids.
- p*-Triazobromobenzene.

**Azo-compounds.** See:—

- 2-Triazo-3:5-dimethylbenzaldehyde.
- 2-Triazo-3:5-dimethylbenzoic acid.
- Triazopyrocatechol methylene ether.
- Tricarballic triazoimide.
- Urazoguanazole.
- Urazoiminourazole.
- m*-Xyleneazoimide.
- m*-Xylenediazoaminobenzoic acid.
- o*-Azodiphenyl (FRIEBEL and RASSOW), A., i, 575.
- Azo-dyes** from *di-p*-aminodiphenylcyclobutadiene (FREUND, A., i, 711).
- from  $\beta$ -naphthol and the  $\alpha$ -naphthylaminemonosulphonic acids (V. GEORGIEVICS), A., i, 239.
- from  $\beta$ -naphthol and the  $\alpha$ -naphthylaminemonosulphonic acids, behaviour of, with sheep's wool (V. GEORGIEVICS and SPRINGER), A., i, 239.
- nitro-, reduction of (ROSENSIEHL), A., i, 429.
- Azoimides**, preparation of (RUPE and V. MAJEWSKI), A., i, 104.
- Azonium dyes**, chloro-derivatives of (KEHRMANN and HIBY), A., i, 418; (KEHRMANN and MÜLLER), A., i, 419; (KEHRMANN and KRAZLER), A., i, 420.
- Azotoluene**, *oo*-dichloro- (COHN), A., i, 638.
- o*-Azotoluene, *p*-diamino-, and its salts (ELBS and SCHWARZ), A., i, 619.
- 3-Azo-2-toluidine** (ROSENSTIEHL), A., i, 429.
- Azoxonium compounds** (KEHRMANN), A., i, 484.
- Azoxybenzene**, isomeric change of (BAMBERGER), A., i, 107.
- di-m*-nitro- (DE BRUYN and BLANKSMA), A., i, 460; (BLANKSMA), A., i, 461.
- o*-Azoxydiphenyl (FRIEBEL and RASSOW), A., i, 575.
- $\alpha$ -Azoxynaphthalene (WACKER), A., i, 655.
- o*-Azoxytoluene, *p*-diamino-, and its salts and diacetyl derivative (ELBS and SCHWARZ), A., i, 619.
- as*-Azoxy-*m*-xylene (BAMBERGER and BRADY), A., i, 142.
- Azoxyxylenes** (BAMBERGER and RISING), A., i, 530.

**B.**

- Bacillus carotovorus* (JONES), A., ii, 264.
- coli communis*, modification of the functions of (GRIMBERT and LEGROS), A., ii, 265.
- action of, on carbohydrates and on formates and lactates (HARDEN), T., 610; P., 1901, 57.

- Bacillus coli communis*, neutral-red as a means of detecting, in water (MAKGILL; SAVAGE), A., ii, 696.
- diphtheria, biology and chemistry of (ARONSON), A., ii, 265.
- and pseudo-diphtheria, indole-like reaction of cultures of (HEWLETT), A., ii, 567.
- pyocyaneus*, physiology of (LOEW and KOZAI), A., ii, 675.
- gases produced by (PAKES and JOLLYMAN), T., 325; P., 1900, 189.
- tartricus*, production of acetylmethyl-carbinol by (GRIMBERT), A., ii, 328.
- tubercle, biochemical studies on the (LEVENE), A., ii, 675.
- typhosus*, action of, on carbohydrates (HARDEN), T., 610; P., 1901, 57.
- Bacteria**, chemistry of (BENDIX), A., ii, 266.
- reaction of, to chemical stimuli (JENNINGS and CROSBY), A., ii, 615.
- a possible cause of clumping in (BRUNTON), A., ii, 69.
- action of, on carbohydrates (HARDEN), T., 610; P., 1901, 57.
- decomposition of formic acid by (PAKES and JOLLYMAN), T., 386; P., 1901, 29.
- action of, on formates in presence of nitrates (PAKES and JOLLYMAN), T., 459; P., 1901, 39.
- reduction of sulphates by (BEYERINCK), A., ii, 120; (SALTET and STOCKVIS), A., ii, 265.
- gases produced by, from certain media (PAKES and JOLLYMAN), T., 322; P., 1900, 189.
- formation of solanine in potatoes by (WEIL), A., ii, 266.
- glucoproteins as a culture media for (LEPIERRE), A., i, 622.
- albumin-forming, in soil and stable manure (GERLACH and VOGEL), A., ii, 675.
- which decompose carbamide, experiments with (BEYERINCK), A., ii, 264.
- denitrifying. See Agricultural Chemistry.
- peptonising, of milk, biology of (KALISCHER), A., ii, 119.
- vinegar, biological differentiation of the two principal (BERTRAND and SAZERAC), A., ii, 523.
- Bacterium icteroides*, action of, on dextrose (HARDEN), A., ii, 567.
- "*Bacterium radicolica*," morphology of (STUTZER), A., ii, 265.
- Badenite** from Roumania (PONT), A., ii, 26.
- Balance Sheet** of the Chemical Society, March, 1901, and of the Research Fund, March, 1901. See Annual General Meeting, T., 885.
- Balsam** of *Picea vulgaris* (TSCHIRCH and BRÜNING), A., i, 91.
- of *Pinus Pinaster* (TSCHIRCH and BRÜNING), A., i, 220.
- of *Pinus sylvestris* (TSCHIRCH and NIEDERSTADT), A., i, 397.
- Barbituric acid** (*malonylcarbamide*), electrolytic reduction of (TAFEL and WEINSCHENK), A., i, 72.
- condensation of, with aldehydes (CONRAD and REINBACH), A., i, 410; (WEINSCHENK), A., i, 528.
- Barium**, occurrence of, in the spring water of Boston Spa (RICHARDS), A., ii, 252.
- and alkali sulphates, simultaneous presence of, in mineral waters (CARLES), A., ii, 506.
- Barium compounds**, recognition of, as the cause of poisoning (VITALI), A., ii, 39.
- Barium** bromide and chloride, combination of, with ammonia in aqueous solution (DAWSON and McCRAE), T., 1070; P., 1901, 177.
- borate (OUVRARD), A., ii, 158.
- chloride and nitrate, transport numbers for (NOYES), A., ii, 144.
- hydride (GUNTZ), A., ii, 385.
- manganate and manganite, preparation of (KASSNER and KELLER), A., ii, 657.
- nitrite (ARNDT), A., ii, 507.
- sulphate, solubility of, in solutions of sodium thiosulphate (DOBBIN), A., ii, 348.
- nitrosulphate (DIVERS and HAGA), T., 1099; P., 1901, 164.
- sulphide, preparation and crystalline form of (MÜLLER), A., ii, 60.
- ammonium imidosulphite (DIVERS and OGAWA), T., 1102; P., 1901, 164.
- Barium organic compounds**:—
- ferricyanides (FISCHER and MÜLLER), A., i, 455.
- and barium potassium platoso-oxalonitrites (VEZES), A., i, 187.
- Barium**, estimation of, as the oxalate (PETERS), A., ii, 692.
- Barley**. See Agricultural Chemistry.
- Barometer** with automatic zero adjustment, a new laboratory (WÖRINGER), A., ii, 648.
- Barosma betulina* and *B. serratifolia*, oil of (KONDAKOFF and BACHTSCHÉEFF), A., i, 334.
- Base**, m. p. 88°, from the reduction of terpinene nitrosite (SEMMLER), A., i, 331.

- Base**, tertiary, from the action of ammonia on di-iodoethyl ether (SAND), A., i, 741.
- $C_4H_5O_2N_3$ , from tetrahydrouic acid, and its salts (TAFEL), A., i, 237.
- $C_8H_{19}ON$ , from the reduction of 3-keto-2:2:5:5-tetramethylpyrrolidine (PAULY and BOEHM), A., i, 607.
- $C_9H_{17}N$ , and its isomeride, from the reduction of fenchocamphoroxime (WALLACH and NEUMANN), A., i, 333.
- $C_{10}H_{15}O_2N$ , from the oxime of acetonyl-propylidenebistetriconic acid (WOLFF and GABLER), A., i, 285.
- $C_{10}H_{16}ON_2$ , from  $\alpha$ -camphornitrilamide and alkalis (TIEMANN and TIGGES), A., i, 20.
- $C_{10}H_{17}ON$ , from the reduction of terpineoxideoxime (SEMMLER), A., i, 331.
- $C_{10}H_{19}N$ , from the reduction of terpine nitrosite (WALLACH and LAUFFER), A., i, 90.
- $C_{11}H_{14}ON_2$ , from cytisine and hydriodic acid in presence of amorphous phosphorus (FREUND and FRIEDMANN), A., i, 289.
- $C_{15}H_{18}O_3N_2$ , from ammonia, hydrochloric acid and acetylharmaline (FISCHER), A., i, 406.
- $C_{15}H_{21}ON_2$ , from the reduction of 5- $\beta$ -hydroxy- $\beta$ -*o*-nitrophenylethyl-2-ethylpyridine (CASTNER), A., i, 563.
- $C_{17}H_{23}N$ ,  $C_{17}H_{24}NCl$ , from  $C_{17}H_{25}ON$  (FARBWERKE VORM. MEISTER, LUCIUS, & BRÜNING), A., i, 691.
- $C_{17}H_{25}ON$ , from the reduction of anilinomethylenecamphor (FARBWERKE VORM. MEISTER, LUCIUS, & BRÜNING), A., i, 691, 692.
- $C_{17}H_{27}N_3$ , from the oxidation of  $\beta$ -camphornitrilamide (TIEMANN and TIGGES), A., i, 20.
- $C_{19}H_{22}ON_2$ , and its hydrochloride, from the action of alcoholic potash on hydrochlorocinchonine (LANGER), A., i, 404.
- $C_{19}H_{22}ON_2$ , and its oxalate, and phenylhydrazone from allocinchonine sulphate (HLAVNIČKA), A., i, 405.
- $C_{20}H_{24}O_2N_4$ , and its derivatives, from mercury fulminate and dimethylaniline (SCHOLL and BERTSCH), A., i, 523.
- $C_{21}H_{26}ON_2$ , from the action of alcoholic sulphuric acid and ammonia on *p*-toluidino-*p*-toluquinoneditolylimide (BÖRNSTEIN), A., i, 376.
- $C_{22}H_{29}N$ , from Russian petroleum (CHLOPIN), A., i, 43.
- Base**,  $C_{24}H_{20}O_2N_2$ , and  $C_{24}H_{22}O_3N_2$ , and their hydrochlorides, from trihydroxyiminotriphenacylamine (KORTEN and SCHOLL), A., i, 550.
- $C_{28}H_{28}N_4$  (or  $C_{14}H_{14}N_2$ ), and  $C_{32}H_{36}N_4$  (or  $C_{16}H_{18}N_4$ ), and their derivatives, from aniline and *o*-toluidine and methylenechlorohydrin (GRASSI-CRISTALDI and SCHIAVO-LENI), A., i, 55.
- $C_{30}H_{24}O_2N_3$ , from the action of alcoholic sodium hydroxide on 3-acetylaminophenylrosinduline chloride (KEHRMANN and SILBERSTEIN), A., i, 102.
- $C_{35}H_{35}N_5$ , and its hydrochloride, from amino-*p*-toluquinoneditolylimide, *p*-toluidine and its hydrochloride, and alcohol (BÖRNSTEIN), A., i, 376.
- Bases**, action of, on salts of the amines (COLSON), A., ii, 496.
- from the compounds formed by the action of  $\alpha$ -chlorohydrin on tertiary amines (BIENENTHAL), A., i, 128.
- from the condensation of formaldehyde with amines (GOLDSCHMIDT), A., i, 652.
- aromatic, action of alcoholic silver nitrate on (VAUBEL), A., i, 691.
- organic, of Russian petroleum (CHLOPIN), A., i, 42.
- arythiosulphonates of (TRÖGER and LINDE), A., i, 337.
- in Scottish shale oil (GARRETT and SMYTHE), P., 1900, 190.
- tertiary, action of hydrogen peroxide on (AUERBACH and WOLFFENSTEIN), A., i, 613.
- Bassoric acid** and **Bassorin** (O'SULLIVAN), T., 1177; P., 1901, 156.
- Bats**, hibernation in (RULOT), A., ii, 256.
- Bauxites**, Italian, composition of supposed (FORMENTI), A., ii, 557.
- Bavenite** from Baveno granite (ARTINI), A., ii, 664.
- Bay**, oil of (SCHIMMEL & Co.), A., i, 394.
- Beans**. See Agricultural Chemistry.
- Bear**, polar, bile of the (HAMMARSTEN), A., ii, 520.
- Bearswort oil**, *isoirone* from (HAARMANN & REIMER), A., i, 727.
- Beech seedlings**, glucoside in (TAILLEUR), A., ii, 466.
- Beer**, test for arsenic in (CHAPMAN; ALLEN; REPORT OF THE COMMISSION TO THE MANCHESTER BREWERS' CENTRAL ASSOCIATION), A., ii, 125; (THOMSON and SHENTON), A., ii, 345.

- Beer**, detection of "saccharin" in, free from salicylic acid (WIRTHLE), A., ii, 135.  
detection of salicylic acid in (PEREIRA), A., ii, 428.  
refractometric method of estimating alcohol and solid matter in (LING and POPE), A., ii, 628.  
estimation of arsenic in (JONES; RYDER and GREENWOOD), A., ii, 280.
- Beeswax**. See Wax.
- Beet-molasses**, lactic acid in (SCHÖNE and TOLLENS), A., i, 116.  
new indicator for estimating the acidity of (RUNYAN), A., ii, 629.
- Beetroot**, colouring matter of, and its absorption spectrum (FORMÁNEK), A., ii, 35.  
Scheibler's extraction method for the determination of the polarisation of (HERZFELD), A., ii, 426.  
rapid estimation of sugar in (HILTNER and THATCHER), A., ii, 535.  
See also Agricultural Chemistry.
- Beetroot-red**, detection of, in wine (BELLIER), A., ii, 210.
- Benz-**. See also Benzo- and Benzoyl-, and under the Parent Substance.
- Benzal-**. See Benzylidene-.
- Benzaldazine**, *o*-chloro-, and its reduction (CURTIUS and PAULI), A., i, 429.
- Benzaldazines**, reduction of (CURTIUS and FRANZEN), A., i, 293.
- Benzaldehyde**, condensation of, with glyoxal and ammonia (WEWIORSKI), A., i, 353.  
action of hydrazobenzene on (RASSOW and LUMMERZHEIM), A., i, 777.  
action of, on hydroxy-acids and sugars (ALBERDA VAN EKENSTEIN), A., i, 120.  
action of, on methyl nonyl ketone (CARETTE), A., i, 13, 127.  
condensation of, with phenyl ethyl ketone (ABELL), T., 928; P., 1901, 128.  
condensation of, with propaldehyde (HACKHOFER), A., i, 277.  
condensation of, with pyruvic acid (ERLENMEYER), A., i, 390.  
action of, on sodium menthol (MARTINE), A., i, 599.  
compound of, with propylidenehydrazine cyanohydrin (EIBNER and SENF), A., i, 166.  
quinol- and resorcinol-carbohydrazones (EINHORN and ESCALES), A., i, 653.
- Benzaldehyde**, *o*-amino-, and its *p*-nitrophenylhydrazone and *di*-bromo- (BAMBERGER and DEMUTH), A., i, 392.
- Benzaldehyde**, *o*-nitro-, action of light on (CIAMICIAN and SILBER), A., i, 390, 547.
- Benzaldehyde-*p*-bromo- and -*p*-chloro-anilines** (HANTZSCH and SCHWAB), A., i, 379.
- Benzaldehyde-cyanohydrin**, condensation of, with urethane (LEHMANN), A., i, 275.
- Benzaldehydenitrotolylhydrazone** (POPE and HIRD), T., 1143; P., 1901, 186.
- Benzaldehyde- $\beta$ -*o*-, -*m*-, and -*p*-phenyl-benziminoazolehydrazone** (MIKLASZEWSKI and V. NIEMENTOWSKI), A., i, 762.
- Benzaldehydophenylhydrazone** (BAMBERGER and GROB), A., i, 567.  
oxidation of (BAMBERGER and GROB), A., i, 296.
- Benzaldehyde-*o*-sulphonic acid** (LEVINSTEIN, LTD.), A., i, 725.
- isoBenzaldoxime** mesityl ether and *m*- and *p*-nitro- (BAMBERGER and RISING), A., i, 141.
- Benzaldoximes**, *o*-amino-, reactions of, and its dibromo-derivative (BAMBERGER and DEMUTH), A., i, 391.  
 $\alpha$ - and  $\beta$ -*p*-nitro-, and their hydrochlorides (EKECRANTZ), A., i, 277.
- Benzalsultim**, chloro- ("chloro- $\psi$ -saccharin") (MASELLI), A., i, 271.
- Benzamide**, sodium, action of alkyl iodides, acid chlorides, halogen derivatives of esters and bromoamides on (TITHERLEY), T., 393; P., 1901, 29.
- Benzamides**, alkyl substituted, and their hydrochlorides, and sodium derivatives, preparation of (TITHERLEY), T., 403; P., 1901, 30.  
substituted, hydrolysis of (REID), A., i, 29.
- Benzamidine**, action of, on aldehydes and on ketones (KUNCKELL and BAUER), A., i, 758, 759.  
*p*-nitro-, cyanidines and pyrimidines from (RAPPEPORT), A., i, 567.
- Benzamidino-isobutyrophenone** and its phenylhydrazone (KUNCKELL), A., i, 294.
- Benzanilide**, alkylation of (LANDER), T., 698; P., 1901, 59.
- Benzaurin**, diacetyl derivative (HERZIG and WENGRAF), A., i, 703.
- Benzene**, formula of (RICHARDSON), A., i, 196; (PELLINI), A., ii, 366.  
molecular configuration of (ERLENMEYER), A., i, 373.  
dielectric constant of (TURNER), A., ii, 54.  
bromination and iodination of (EDINGER and GOLDBERG), A., i, 22, 23.



- Benzene**, chlorination of, in presence of the mercury aluminium couple (COHEN and DAKIN), T., 1118; P., 1901, 91.
- action of isobutylene dibromide on, in presence of aluminium chloride (BODROUX), A., i, 523.
- action of trimethylene dibromide on, in presence of aluminium chloride (BODROUX), A., i, 196.
- iodosulfuride (WEINLAND and STILLE), A., i, 684.
- disubstitution derivatives of, nitration of (CLOEZ), A., i, 72.
- estimation of sulphur in commercial, intended for enriching illuminating gas (IRWIN), A., ii, 473.
- Benzene**, bromo-, action of concentrated nitric acid on (BANDROWSKI), A., i, 21.
- bromonitro-, isomeric, simultaneous formation of (HOLLEMAN), A., i, 318.
- o*- and *p*-bromonitro-, action of, on *p*-phenylenediamine (BANDROWSKI), A., i, 48.
- m*-dibromodinitro-, derivatives of (JACKSON and COHOE), A., i, 585.
- tribromodinitro- and tribromotritro-, action of sodium sulphite on (JACKSON and EARLE), A., i, 585.
- chlorodibromo- and dichlorobromoderivatives of (HURTLEY), T., 1293; P., 1901, 191.
- 1-chloro-2:4-dinitro-, action of alcoholic potassium cyanide on (VAN HETEREN), A., i, 460.
- 1-chloro-3:5-dinitro-, action of alcoholic sodium methoxide on (DE KOCK), A., i, 460.
- s*-tribromo- (JACKSON and BEHR), A., i, 586.
- nitro-, electrolytic reduction of (BOEHRINGER and SONS), A., i, 684.
- interaction of, with aniline in presence of alkalis (WOHL and AUE), A., i, 612.
- o*-, *m*- and *p*-dinitro-, action of sodium monosulphide on (DE BRUYN and BLANKSMA), A., i, 460.
- trinitro-, additive compounds of, with  $\alpha$ - and  $\beta$ -naphthylamine, and their acetyl derivatives (SUDBOROUGH), T., 525; P., 1901, 44.
- 1:2:3:5-tetranitro-, 1:3-dinitro-4:5-dinitroso-, and 1:3:5-trinitro-2-nitroso- (NIETZKI and DIETSCHY), A., i, 196.
- nitroso-, action of, on aromatic hydrazines (SPITZER), A., i, 98; (BAMBERGER), A., i, 171.
- action of, on toluene-*p*-sulphinic acid (BAMBERGER and RISING), A., i, 201.
- Benzeneazetacetonedicarboxylic acid**, *p*-nitro-, and its sodium salts, ethyl ester, phenylhydrazone, and oxime (BÜLOW and HÖFFNER), A., i, 240.
- Benzeneazoaminomethylaziminotoluene** hydrochloride (PINNOW), A., i, 485.
- Benzeneazo-*o*-bromo-*p*-cresol**, and its acetyl and benzoyl derivatives (HEWITT and PHILLIPS), T., 160; P., 1900, 223.
- Benzeneazo-*p*-cresol** (DIMROTH), A., i, 440.
- and *o*-, *m*- and *p*-bromo-, and their acetyl and benzoyl derivatives (HEWITT and PHILLIPS), T., 160; P., 1900, 223.
- 4-Benzeneazo-1:3(or 5)-diphenyl-5(or 3)-benzylpyrazole** (BÜLOW and GROTOWSKY), A., i, 476.
- Benzeneazohydroxy-methylphenyl- and -phenyl-mercuric salts** (DIMROTH), A., i, 440.
- Benzeneazohydroxytolualdehydes** and their derivatives (BORSCHKE and BOLLER), A., i, 573.
- Benzeneazohydroxyxylylidines** (BAMBERGER and RISING), A., i, 531.
- Benzeneazo- $\alpha$ -ketoglutarimide** and its phenylhydrazone (BÜLOW and HÖFFNER), A., i, 241.
- Benzeneazo- $\beta$ -naphthol** and its isomeride, and their nitro- and bromo-derivatives (BETTI and LEONCINI), A., i, 55.
- Benzeneazo- $\alpha$ - and - $\beta$ -naphthylleucauramines** (MÖHLAU and HEINZE), A., i, 433.
- Benzeneazo-*o*-nitrophenyl ethyl ether** (HEWITT and LINDFIELD), T., 159; P., 1900, 222.
- Benzeneazo-*o*-nitrosalicylic acid**, and its methyl and ethyl esters (HEWITT and FOX), T., 50; P., 1900, 189.
- Benzeneazophenylacetylacetophenone** (BÜLOW and GROTOWSKY), A., i, 475.
- Benzeneazophenyliminomethanethio-methane** (BUSCH and HOLZMANN), A., i, 235.
- Benzeneazophenylleucauramine** (MÖHLAU and HEINZE), A., i, 432.
- Benzeneazopyrrole** and its 2:4- and 2:5-dimethyl and 5:2-phenylmethyl derivatives (PLANCHER and SONCINI), A., i, 432.
- Benzene-4-azoresorcinol** and its phenylhydrazone and methyl ether (ORNDORFF and THEBAUD), A., i, 774.
- Benzeneazoresorcyaldehyde** and its phenylhydrazone (BORSCHKE and BOLLER), A., i, 573.
- Benzeneazosalicylic acid**, nitration of, and the ethyl ester of the *p*-nitro-derivative (HEWITT and FOX), T., 49; P., 1900, 189.

- Benzenediazohydroxylamino-*p*-toluene** (BAMBERGER), A., i, 171.
- Benzenediazonium.** See Diazonium.
- Benzenepentacarboxylic acid** (VERNÉIL), A., i, 546.
- Benzenesulphonic acid** and *p*-bromo-, and *p*-chloro-, purification of (KRAFFT and WILKE), A., i, 74.
- m*-mono- and *di*-bromo- (DIMROTH), A., i, 440.
- 4-bromo-2-nitro-, 4-chloro-2-nitro-, and their chlorides, and *p*-nitro- and its chloride and amide (BLANKSMA), A., i, 461.
- Benzene-4-sulphonic acid**, 1:3-dichloro-6-nitro- (BADISCHE ANILIN- and SODA-FABRIK), A., i, 755.
- Benzenesulphonic acids**, amino-, alkylated (GNEHM and SCHEUTZ), A., i, 519.
- 7-Benzenesulphonoxycoumarone-4-carboxylic acid**, methyl ester (v. PECHMANN and GRAEGER), A., i, 287.
- Benzenethiolsulphonic acid**, diazoaryl esters (TRÖGER and EWERS), A., i, 172.
- Benzene-1:3:5-tricarboxylic acid.** See Trimesic acid.
- Benzenoid amines** and their acetyl and formyl derivatives, relation between physical constants and constitution in (GORDAN and LIMPACH), T., 1080; P., 1901, 154.
- isomeric change and meta-substitution in (LAPWORTH), P., 1901, 2.
- primary, interaction of, with urethanes (DIXON), T., 102; P., 1900, 207.
- Benzhydrol**, 4-nitro-4'-amino- (KALLE & Co.), A., i, 698.
- Benzhydrol ether** (STOBBE and ZEITSCHEL), A., i, 538.
- Benzhydrols**, condensation of, with *p*-hydroxyazo-compounds (MÖHLAU and KEGEL), A., i, 56.
- Benzhydroxamic acid**, *m*-nitro- and *m*-nitroso- (ANGELICO and FANARA), A., i, 707.
- Benzhydrylamine** and its salts (KONOWALOFF), A., i, 282.
- Benzidine**, electrolytic preparation of (LÖB), A., i, 487.
- 3:3'-dichloro-, and its salts and dibenzoyl derivative (COHN), A., i, 166.
- Benzil**, condensation of, with dibenzyl ketone (HENDERSON and CORSTORPHINE), T., 1256; P., 1901, 190.
- Benzilic acid** (*hydroxydiphenylacetic acid*, *diphenylglycollic acid*), condensation of, with phenols (BISTRZYCKI and NOWAKOWSKI), A., i, 716.
- bimolecular anhydride of (EINHORN and PREIFFER), A., i, 712.
- Benzilmonooximes**, action of nitrogen tetroxide on (PONZIO), A., i, 154.
- Benziminazoles**, chloro- (MANUELLI and RECCHI), A., i, 49.
- Benzoic acid**, detection of cinnamic acid in (JORISSEN), A., ii, 207, 291.
- Benzoic acid**, mercuric salt (DIMROTH), A., i, 440.
- Benzoic acid**, benzoyl-*o*- and -*m*-tolyl esters (BAROLOTTI), A., i, 36.
- chloromethyl ester (HENRY), A., i, 581.
- 2:4-*di*- and 2:4:6-*tri*-iodophenol esters (BRENANS), A., i, 643.
- Benzoic acid**, *o*-amino-. See Anthranilic acid.
- 2:3-*di*amino-, and its compounds with sugars (SCHILLING), A., i, 385.
- o*- and *p*-bromo-, thermochemistry of (MASSOL), A., i, 323.
- 2:3-bromonitro- and 2:3-chloronitro- (HOLLEMAN), A., i, 275.
- o*-chloro-, thermochemistry of (MASSOL), A., ii, 226.
- o*- and *m*-chloro- and -bromo-, nitration of (HOLLEMAN and DE BRUYN), A., i, 591.
- 2:3:5-*tri*chloro-, and its amide, chloride, nitrile, salts, ethyl ester and *mono*- and *di*-nitro-derivatives (MATTHEWS), T., 43; P., 1900, 187.
- o*-chlorodinitro-, structure of Kalle & Co.'s (HOLLEMAN), A., i, 591.
- 2-chloro-3:5-*di*nitro-, and its ethyl ester (COHN), A., i, 642.
- p*-cyano-, methyl ester (RUPE and v. MAJEWSKI), A., i, 104.
- o*-iodo-, thermochemistry of (MASSOL), A., ii, 226.
- nitro-, reduction of, by hyposulphurous acid (GOLDBERGER), A., i, 23.
- p*-nitro-, *o*-nitrophenyl ester (KYM), A., i, 47.
- tr*initro-, ethyl ester, additive compounds of, with  $\alpha$ - and  $\beta$ -naphthylamine (SUDBOROUGH), T., 531; P., 1901, 44.
- o*-nitroso-, and its esters (CIAMICIAN and SILBER), A., i, 390, 548.
- thio-, action of alkyl thiocyanates and alkylthiocarbimides on (WHEELER and MERRIAM), A., i, 515.
- additive reactions of (WHEELER), A., i, 636.
- Benzoic acids**, monosubstituted, acidimetric value of (MASSOL), A., i, 323.
- Benzoic anhydride**, *m*-bromo- and *m*-nitro- (AUTENRIETH), A., i, 186.
- Benzoic chloride**, *o*-nitro-, crystallised (MAVROJANNIS), A., i, 470.

- Benzoic thiocyanate**, action of, on ethyl phenyl-thiol- and -thion-carbazinate (WHEELER and DUSTIN), A., i, 25.
- o*-**Benzoisulphinide**. See "Saccharin."
- Benzo- $\beta$ -ketopentamethyleneazinecarboxylic acid** and its ethyl ester, and their sodium salts and benzylidene derivatives (THOMAS-MAMERT and STRIEBEL), A., i, 614.
- Benzonitrile hexachloride**, interaction of, with alcoholic soda and with quinoline (MATTHEWS), T., 44; P., 1900, 187.
- Benzophenone**, action of ethyl alcohol and of alcoholic hydrogen chloride on (MACKENZIE), T., 1210; P., 1901, 150.
- derivatives (BARTOLOTTI), A., i, 36.
- chloride, action of sodium alkylloxides on (MACKENZIE), T., 1206; P., 1901, 150.
- Benzophenones**, amino-, substituted, action of aromatic amines on, in presence of sulphuric acid (LEMOULT), A., i, 425.
- Benzophenonedisulphone**. See Diethyl-disulphonediphenylmethane.
- Benzophenonephosphinic acid** and its derivatives (MICHAELIS and GUSEWELL), A., i, 300.
- Benzophenone-*o*-sulphonic acid**. See Benzoylbenzene-*o*-sulphonic acid.
- Benzopinacene** from alcohol and benzophenone (CIAMICIAN and SILBER), A., i, 36.
- 1:4-Benzopyranol**, derivatives (BÜLOW and WAGNER), A., i, 400, 559.
- and its mono- and di-acetyl and dibenzoyl derivatives, and dimethyl ether (BÜLOW and v. SICHERER), A., i, 603.
- Benzo- $\gamma$ -pyronecarboxylic acid** and its ethyl ester and the action of ammonia on (RUHEMANN and BAUSOR), T., 471; P., 1901, 40.
- o*-**Benzoquinone**. See *o*-Quinone.
- Benzoquinonephenylhydrazonetetramethyldiaminodiphenylmethane** (MÖHLAU and KEGEL), A., i, 57.
- 1-Benzoxo-2-benzoylcamphene** and the action of aniline, phenylhydrazine, sulphuric acid and of alcoholic potash on (FORSTER), T., 991; P., 1901, 167.
- Benzoxymethylfurfural** (FENTON and GOSLING), T., 811; P., 1901, 119.
- p*-**Benzoxyphenylacetamide** (ORTON), T., 1354; P., 1901, 200.
- Benzoyl-**. See also under Parent Substance.
- Benzoylacetetic acid**, esters, action of epichlorohydrin and epibromohydrin on the sodium derivatives of (HALLER), A., i, 538.
- Benzoylacetetic acid**, esters, action of ethyl iodide and dry silver oxide on (LANDER), P., 1901, 59.
- 4-Benzoylactetylpyridine** and its salts and isooxazole derivative (TSCHERNE), A., i, 749.
- o*-**Benzoylaminobenzoic acid**, methyl ester (MEHNER), A., i, 471.
- methyl and ethyl esters (MEHNER), A., i, 645.
- p*-**Benzoylaminophenylacetic acid** and its amide (ORTON), T., 1353; P., 1901, 200.
- $\alpha$ -**Benzoylamino- $\beta$ -isopropylacrylic acid** and anhydride (ERLENMEYER and KUNLIN), A., i, 468.
- Benzoylanisoylbromomethane** (POND and SHOFFSTALL), A., i, 36.
- Benzoylanisoylmethane**. See  $\alpha$ -Hydroxy-anisylideneacetophenone.
- Benzoylation** of fatty acids in presence of ammonia (ORTON), T., 1351; P., 1901, 200.
- Benzoylbenzene-*o*-sulphonic acid** (*benzophenonesulphonic acid*) and its salts (KRANNICH), A., i, 153.
- o*-**Benzoylbenzoic acid**, tautomerism of (HALLER and GUYOT), A., i, 146.
- trichloro- (GRAEBE and ROSROWZEW), A., i, 544.
- Benzoylbenzylamine**, nitroso-, action of, on aniline, phenylhydrazine, and *p*-toluidine (APITZSCH), A., i, 138.
- $\delta$ -**Benzoyl- $\alpha\beta$ -butanediol** (HALLER), A., i, 539.
- $\alpha$ -**Benzoylcamphor** and its isomeride (FORSTER), T., 987; P., 1901, 167.
- Benzoylcarbamide-*o*-sulphonic acid**, and *p*-nitro-, and their salts (HOLMES), A., i, 271.
- Benzoylchloroaminobenzene**, preparation of (CHATTAWAY and ORTON), T., 279; P., 1900, 231.
- Benzoyl-*o*- and -*m*-cresol** (BARTOLOTTI), A., i, 36.
- Benzoylcyanidephenylhydrazone** (SACHS and BRY), A., i, 229.
- Benzoylcyanooacetic acids**, *o*-, *m*-, and *p*-nitro-, esters (MAVROJANNIS), A., i, 470.
- Benzoyldiacetylene** (MARCH), A., i, 596.
- Benzoyldiphenylcarbamide** (SCHALL), A., i, 766.
- Benzoylethylideneaniline**, and its dibromide and nitrosoamine (EIBNER), A., i, 640.
- Benzoyl- $\psi$ -ethylphenylthiocarbamide** (WHEELER and MERRIAM), A., i, 515.

- Benzoylformaldehyde-*o*-, *m*-, and *p*-nitrophenylhydrazones** and the isomerides of the *o*- and *m*-compounds (BAMBERGER and SCHMIDT), A., i, 566.
- Benzoylformaldehydphenylhydrazone** and its isomeride (BAMBERGER and SCHMIDT), A., i, 565.
- Benzoylformic acid**, *o*-amino-, ethyl ester (ERDMANN), A., i, 536.  
See also *o*-Formylaminobenzoic acid, ethyl ester.  
methyl ester (MEHNER), A., i, 645.
- $\beta$ -Benzoylglutaric acid** and its salts and ketodilactone (FITTIG and SALOMON), A., i, 122.
- $\alpha$ -Benzoylheptinene** (*benzoylænanthylidene*) and the action of sulphuric acid on (MOUREU and DELANGE), A., i, 14.  
decomposition of, by alkalis (MOUREU and DELANGE), A., i, 14.
- Benzoylhexoylmethane** (MOUREU and DELANGE), A., i, 14.
- Benzoyliminodithiocarbonic acid**, esters (WHEELER and MERRIAM), A., i, 705.
- Benzoylindeneoxalic acid**, and *p*-nitro-, ethyl esters (THIELE), A., i, 76.
- Benzoylmandel-amide and -methyramid** (ORTON), T., 1354; P., 1901, 200.
- Benzoylmethylisocarbamide** (McKEE), A., i, 757.
- Benzoyl-4-methylsemithiocarbazide** (YOUNG and OATES), T., 667; P., 1901, 86.
- Benzoyl- $\psi$ -methyl-thiocarbamide and -phenylthiocarbamide** (WHEELER and MERRIAM), A., i, 515.
- $\alpha$ -Benzoyl- $\alpha$ -naphthylhydrazine** and its  $\beta$ -acetyl derivative (McPHERSON and GORE), A., i, 572.
- Benzoyl-*o*-nitroanilide**, *p*-nitro- (KYM), A., i, 47; (MIKLASZEWSKI and v. NIEMENTOWSKI), A., i, 761.
- Benzoyl-*m*-nitroanilideiminochloride** (LEY), A., i, 760.
- Benzoylænanthylidene**. See Benzoylheptinene.
- $\gamma$ -Benzoyl- $\beta$ -phenylbutyric acid** and its semicarbazone (STOBBE), A., i, 324.
- Benzoylphenylcarbamides**, *s*- and *as*- (McKEE), A., i, 756.
- Benzoylphenylhydrazine**, *m*-bromo- and *m*-nitro- (AUTENRIETH), A., i, 186.
- Benzoylphenylnitrosohydrazine** (VOSWINCKEL), A., i, 618.
- 2-Benzoyl-3-phenylcyclopentanone-4-carboxylic acid**, methyl ester, and its semicarbazone (STOBBE and FISCHER), A., i, 148.
- 1-Benzoylpyridazone**, 4:5-*di*bromo- (BISTRZYCKI and HERBST), A., i, 386.
- Benzoyldithiocarbamic acid**, esters (WHEELER and MERRIAM), A., i, 514; (WHEELER and JOHNSON), A., i, 705.
- Benzoylthioglycollamide** (WHEELER and MERRIAM), A., i, 515.
- Benzoylthiolcarbanilic acid** (WHEELER), A., i, 636.  
methyl ester (WHEELER and DUSTIN), A., i, 25.
- Benzoyl-*o*-toluidide**, 6-chloro- (COHN), A., i, 637.
- Benzoyltoluidides**, *o*-, *m*-, and *p*-, *o*-amino- (MEHNER), A., i, 472.
- Benzoyl-*m*-tolyl methyl ether** (BARTOLOTTI), A., i, 37.
- $\alpha$ -Benzoyl- $\gamma$ -valerolactone**,  $\delta$ -chloro- and  $\delta$ -bromo-, and the phenylhydrazone of the chloro-compound (HALLER), A., i, 539.
- o*-Benzoyl-*m*-xylylide**, *o*-amino- (MEHNER), A., i, 472.
- Benzyl alcohol** from ylang-ylang oil (v. SODEN and ROJAHN), A., i, 733.  
influence of, on the potential of oxidation cells (SCHAUM), A., ii, 300.
- Benzyl chloride** and iodide, action of, on pyridine (TSCHITSCHIBABIN), A., i, 484.  
cyanide. See Phenylacetoneitrile.  
nitrite (v. BAeyer and VILLIGER), A., i, 309.  
*m*-xylyl sulphide (WHEELER and JOHNSON), A., i, 707.
- d*- $\alpha$ -Benzylallylmalamide** (LUTZ), A., i, 10.
- Benzylamine**, action of, on  $\beta$ -chloroallylthiocarbimide (DIXON), T., 559; P., 1901, 49.  
oxidation of (BAMBERGER and SCHEUTZ), A., i, 587.
- Benzylaniline**, action of, on  $\beta$ -chloroallylthiocarbimide (DIXON), T., 558; P., 1901, 49.  
*m*-amino-, and *m*-nitro-, and their hydrochlorides (PURGOTTI and MONTI), A., i, 22.
- Benzylantipyrine** and its hydrochloride, and amino- and nitro-derivatives (MICHAELIS, VOSS, and GREISS), A., i, 409.
- Benzylazoimide** (CURTIUS and DARAPSKY), A., i, 573.
- Benzylbromocamphor** and its isomeride (HALLER and MINGUIN), A., i, 599.
- $\beta$ -Benzylbutyric acid**, dithio-, ethylester and its  $\alpha$ -mono- and -di-methyl and -ethyl derivatives (POSNER), A., i, 704.
- Benzylcarbinol** (*phenylethyl alcohol*) in oil of roses (v. SODEN and ROJAHN), A., i, 39, 733.
- Benzylcarvacrol** and its acetyl derivative (VENTURI), A., i, 590.

- $\alpha$ -Benzyleinnamic acid** (*benzylidene-hydrocinnamic acid*), condensation of, to  $\alpha$ -benzylidenehydrindone (SCHMID), A., i, 210.
- Benzyl-*m*-cresol** and its acetyl derivative (VENTURI), A., i, 590.
- $\beta$ -Benzylisocrotonic acid**, thio- (POSNER and DEINHARDT), A., i, 704.
- Benzylidihydroisoindole**, *o*-amino- and *o*- and *p*-nitro- (FRÄNKEL), A., i, 45.
- Benzylidimethylcarbinol** (GRIGNARD), A., i, 680.
- Benzylethylaminoanthraquinone** (HALLER and GUYOT), A., i, 279.
- Benzylethylaminobenzenesulphonie acid**, salts (GNEHM and SCHEUTZ), A., i, 520.
- Benzylethylamino-benzyl- and -benzoyl-benzoic acids** (HALLER and GUYOT), A., i, 276.
- m*-Benzylethylaminophenol** and its phthalein (GNEHM and SCHEUTZ), A., i, 520.
- Benzylethylaniline**, nitration of (GNEHM and SCHEUTZ), A., i, 520.
- Benzyl- $\beta$ -glutaric acid** and its salts and ketodilactones (FITTIG and STERNBERG), A., i, 121.
- Benzylhydrazine**, chloro- and nitroso-derivatives (CURTIUS and PAULI), A., i, 429.
- Benzylhydrindamine** and its isomeric bromocamphorsulphonates and picrate (KIPPING and HALL), T., 434; P., 1901, 37.
- $\beta$ -Benzylhydroxylamine**, action of air and water on (BAMBERGER and SZOLAYSKI), A., i, 84.
- Benzylidene chloride**, action of sodium alkyl oxides and of phenol on (MACKENZIE), T., 1212; P., 1901, 150.
- Benzylideneacetoacetic- $\beta$ -aminocrotonic acid**. See  $\delta$ -Phenyl- $\beta$ -amino- $\beta$ -heptene- $\zeta$ -one- $\gamma$ -dicarboxylic acid.
- Benzylideneacetone**, sulphonal derivatives of (POSNER), A., i, 474.
- Benzylideneacetophenone**, sulphonal derivatives of (POSNER), A., i, 474.
- Benzylidene- $\beta$ -acetylglutaric acid** and its salts, and ketodilactone and its dibromide (FITTIG and STERNBERG), A., i, 121.
- Benzylideneaminophenanthrene** (SCHMIDT and STROBEL), A., i, 464.
- Benzylideneaminophenylguanidine**, *m*-nitro-, nitrate and picrate (PELLIZARI and RICKARDS), A., i, 769.
- Benzylideneamylamine- $\beta$ -naphthol** (BETTI), A., i, 754.
- Benzylideneaniline** and its chloro-, bromo-, and nitro-derivatives (HANTZSCH and SCHWAB), A., i, 379.
- Benzylideneaniline picrate** (BETTI and SPERONI), A., i, 81.
- hydrogen sulphite, *m*-nitro- (EIBNER), A., i, 378.
- Benzylideneaniline-4-methyl-2-cyclopentanonecarboxylic acid**, ethyl ester (DIECKMANN), A., i, 542.
- Benzylideneanil- $\alpha$ - and - $\beta$ -naphthols**, and *m*-nitro-derivative of the  $\beta$ -compound (BETTI and SPERONI), A., i, 81.
- Benzylidene-*p*-anisidine** (HANTZSCH and SCHWAB), A., i, 379.
- Benzylidenebarbituric acid**, and *o*-nitro- and its compound with ammonia (CONRAD and REINBACH), A., i, 410.
- Benzylidenebenzamidine** and its hydrochloride (KUNCKELL and BAUER), A., i, 759.
- Benzylidenebenzylamine- $\beta$ -naphthol** and its diacetyl derivative (BETTI), A., i, 754.
- Benzylidenebenzylhydrazine**, chloro- and nitroso-derivatives (CURTIUS and PAULI), A., i, 429.
- Benzylidenebisacetoacetic acid**, ethyl ester, tautomerism of (RABE), A., i, 34.
- Benzylidenebisaminothiazole** and its decomposition (HANTZSCH and SCHWAB), A., i, 380; (HANTZSCH and WITZ), A., i, 402.
- Benzylidenebutyrylhydrazone** (BONGERT), A., i, 410.
- Benzylidenebromophor**, *o*- and *p*-bromo- (HALLER and MINGUIN), A., i, 600.
- Benzylidenedianiline** anhydrosulphite and the action of water on, and *m*-nitro- (EIBNER), A., i, 378.
- Benzylidenediindazole** (FISCHER and SEUFFERT), A., i, 411.
- Benzylidene- $\beta\beta$ -diphenylsemithiocarbazine** and its methyl derivative (BUSCH and HOLZMANN), A., i, 234.
- Benzylidenedi-2:4:5-trimethylbenzylhydrazine** (CURTIUS and FRANZEN), A., i, 293.
- Benzylidenefluorylhydrazine** (DIELS), A., i, 522.
- $\alpha$ -Benzylidenehydrindone** and its oxime and phenylhydrazone (SCHMID), A., i, 210.
- Benzylideneindanedione**, *p*-amino- (NÖLTING and BLUM), A., i, 728.
- Benzylideneindene** (THIELE), A., i, 76.
- Benzylidenementhone**, preparation of (MARTINE), A., i, 599.
- Benzylidene- $\alpha$ -methyl-, - $\alpha$ -ethyl-, - $\alpha$ -propyl-, and - $\alpha$ -amyl-anhydrazetone-benzils** (JAFF and MELDRUM), T., 1030; P., 1901, 175.
- Benzylidene-1-methylazimino-*m*-toluidine** (PINNOW), A., i, 485.

- Benzylidene-2-methylsemicarbazone** and *m*-nitro- (YOUNG and OATES), T., 662; P., 1901, 86.
- Benzylidene-4-methylsemithiocarbazon**, oxidation of, with ferric chloride (YOUNG and EYRE), T., 59; P., 1900, 188.
- Benzylidene- $\beta$ -naphthol**, amino-, and its hydrochloride and diacetyl derivative (BETTI), A., i, 611.
- Benzylidene- $\beta$ -naphthylamine- $\beta$ -naphthol** (BETTI and SPERONI), A., i, 81.
- Benzylidenenitrophthalide** and its isomeride (LEUPOLD), A., i, 711.
- Benzylidene-*o*-phenetidine** (JACOBSON and STEINBRECK), A., i, 380.
- Benzylidenephénylguanazole** (PELLIZARI and RONCAGLIOLI), A., i, 772.
- Benzylidenephényl glycolohydrazide** (CURTIUS and MÜLLER), A., i, 779.
- Benzylidenephénylhydrazine- $\alpha$ - and - $\beta$ -naphthols** (BETTI and SPERONI), A., i, 778.
- Benzylidene-4-phenylsemithiocarbazon**, oxidation of, with ferric chloride (YOUNG and EYRE), T., 60; P., 1900, 189.
- Benzylidenephthalide**, *m*-nitro- (LEUPOLD), A., i, 711.
- Benzylidenepropiophenone** and its dibromide and phenylhydrazon and its condensation with phenyl ethyl ketone (ABELL), T., 932; P., 1901, 128.
- Benzylidenesemicarbazide** (HOLROYD), T., 1326; P., 1901, 197.
- Benzylidenesemithiocarbazon**, oxidation of, by ferric chloride (YOUNG and EYRE), T., 54; P., 1900, 188.
- Benzylidene-*p*-toluidine**, isomeric, and its methiodide and ethiodide (HANTZSCH and SCHWAB), A., i, 379.
- Benzylidene-*o*-xylylenehydrazine** (FRÄNKEL), A., i, 44.
- $\delta$ -Benzylmalamic acids**, *d*-, *l*-, and *i*-, and their metallic and benzylamine salts, methyl ester, and amides (LUTZ), A., i, 8.
- d*- $\alpha$ -Benzylmalamide** (LUTZ), A., i, 10.
- 5-Benzylmercapto-2-phenylimino-3-phenyloxydiazoline** (WHEELER and DUSTIN), A., i, 26.
- m*-Benzylmethylaninobenzenesulphonic acid** and its salts (GNEHM and SCHEUTZ), A., i, 520.
- Benzylmethylaninophényl glyoxylic acid** (BOEHRINGER & SONS), A., i, 714.
- d*- $\beta$ -Benzylmethyalmamide** (LUTZ), A., i, 10.
- p*-Benzoyloxyphenylcarbamide** (SPIEGEL and SABBATH), A., i, 534.
- Benzylphenyl-**. See Phenylbenzyl-.
- Benzylpiperidinium-bromo-, -chloro-, -iodo-, and -hydroxy-acetic acids**, ethyl esters (WEDEKIND), A., i, 639.
- Benzyl isopropyl ketone** and its semicarbazone (BLAISE), A., i, 253.
- Benzylpyridines**, 2- and 3-, and their salts (TSCHITSCHIBABIN), A., i, 484.
- Benzylsulphonic acid**. See Toluene- $\omega$ -sulphonic acid.
- Benzyl-*p*-toluidine** and **Benzyltolylbenzenesulphonamide** (APITZSCH), A., i, 138.
- Benzyl-*o*-, *m*-, and *p*-toluidines**, *m*-nitro-, and their hydrochlorides (PURGOTTI and MONTI), A., i, 22.
- 2-Benzyl-2-*o*-tolyl diketohydrindene** (GOLDBERG), A., i, 33.
- $\gamma$ -Benzylvaleric acid**, *dithio*-, and its ethyl ester (POSNER and DEINHARDT), A., i, 703.
- 3-Benzylxanthine** (BOEHRINGER & SONS), A., i, 770.
- Bergamot oil**, wild, constituents of (BRANDEL and KREMERS), A., i, 598.
- Berlin blue**, formation of (MATUSCHEK), A., i, 635, 636, 677.
- Berzelianite** from the Skrickerum mine, Sweden (SVEDMARK), A., ii, 604.
- Bessemer processes**, open hearth and basic, spectra of flames from (HARTLEY and RAMAGE), A., ii, 366.
- Betaine**, compound of, with water (BREDIG), A., i, 608.
- Betitol** from beetroot (v. LIPPMANN), A., i, 390.
- Beverages**, detection and estimation of "dulcin" in (BELLIER), A., ii, 50.
- estimation of "saccharin" in (DELE), A., ii, 46; (DÉFOURNEL), A., ii, 588.
- Bignonia Tecoma**, colouring matter of (LEE), T., 284; P., 1901, 4.
- Bile**, variations in the composition of (CRACIUNU), A., ii, 459.
- secretion and composition of (BRAND), A., ii, 459.
- functions of, as a solvent (MOORE and PARKER), A., ii, 402.
- elimination of sodium salicylate by the (LINOSSIER), A., ii, 564.
- of the polar bear (HAMMARSTEN), A., ii, 520.
- Bilifuscin** (v. ZUMBUSCH), A., i, 283.
- Bilirubin**, formula of (ORNDORFF and TEEPLE), A., i, 602.
- oxidation of, by ammonium persulphate (HUGOUNEQ), A., i, 242.
- detection of, in urine by Ehrlich's diazo-reaction (PRÖSCHER), A., ii, 296.

- Biotite** from Butte, Montana (WEED), A., ii, 65.  
from the Tatra Mountains (GORAZDOWSKI), A., ii, 170.
- Birds**, acid poisoning in (MILROY), A., ii, 611.  
formation of uric acid in the liver of (KOWALEWSKI and SALASKIN), A., ii, 671.
- Bisazoxyacetic acid** ("triazoxyacetic acid") and its salts (HANTZSCH and LEHMANN), A., i, 132.
- Bisazoxymethane** (HANTZSCH and LEHMANN), A., i, 132.
- 2,4-Bisbenzeneazoresorcinol** methyl ether (ORNDORFF and THEBAUD), A., i, 775.
- Bisdiazomethane**. See Dihydotetrazine.
- Bisdihydrophenanthrene**, bisnitro-, and **Bisdihydrophenanthrylene** (*bisphenanthran*), mono- and di-nitro- (SCHMIDT), A., i, 77.
- Bis-p-dimethyl-o-carboxycinnamic** and **Bis-p-dimethylphthalic acids** from the oxidation of bisdihydrosantonic acid (GRASSI-CRISTALDI and TOMARCHIO), A., i, 35.
- Bisdinaphthazanthoneamine** (FOSSE), A., i, 604.
- Bismarck-brown**, constituents of (TAUBER and WALDER), A., i, 41.
- Bismuth salts**, isomorphism between, and the salts of the rare earths (BODMAN), A., ii, 454.  
comparison of the action of reducing agents on (T. and C. T. TYRER), A., ii, 693.  
 $\text{Bi}_2\text{O}_3\text{—N}_2\text{O}_5\text{—H}_2\text{O}$ , normal and basic (VAN BEMMELEN and RUTTEN), A., ii, 24.
- Bismuth chloride**, compounds of, with aniline and quinoline (SCHIFF), A., i, 375.  
compound of, with pyridine (MONTMARTINI), A., i, 163.  
haloids, compounds of, with organic bases (VANINO and HAUSER), A., i, 289.  
basic nitrates (ALLAN), A., ii, 318.  
caesium nitrate (WELLS, BEARDSLEY, JAMIESON, and METZGER), A., ii, 653.  
oxide, hydrated (THIBAUT), A., ii, 106.  
suboxide (TANATAR), A., ii, 553.  
phosphate, soluble (MONTMARTINI and EGIDI), A., ii, 106.  
orthophosphate (MONTMARTINI and EGIDI), A., ii, 62.  
sulphide, action of hydrogen on (PÉLABON), A., ii, 165.
- Bismuth, estimation of:—**  
estimation of, electrolytically (WIMMENAUEER), A., ii, 424.  
estimation of, volumetrically, in dressings (FRERICHS), A., ii, 201.
- Bis-p-nitrophenyl-hydroxy-and-methylcyanidine** (RAPPEPORT), A., i, 569.
- Biscyclopentadienecarboxylic acid** and its dimethyl ester and the tetrabromide of the ester (THIELE), A., i, 182.
- Bisphenyl-ethyl- and -propyl-pyrazolones** and their oxidation products (BLAISE), A., i, 363.
- Bisphenylpropylpyrazolone** (BONGERT), A., i, 409.
- Bitter substances**, behaviour of acid aqueous solutions of, towards different solvents, and resisting power of, to putrefaction (PROELSS), A., ii, 706.
- Bitumen**, estimation of sulphur in (PELLET), A., ii, 622.
- Bleaching powder**, formation and constitution of (v. TIESENHOLZ), A., ii, 155; (DIRZ), A., ii, 239.
- Bleaching power** of persulphates (NAMIAS), A., ii, 16.
- Blödit** from Hallstatt (KOECHLIN), A., ii, 64.
- Blood**, method of distinguishing varieties of (UHLENHUTH), A., ii, 325.  
animal and human, hæmoglobin crystals for the distinction of (MOSER), A., ii, 712.  
action of hydrogen peroxide on: differentiating between the blood of man from that of animals (CORRON), A., ii, 295.  
oxidation of, by ammonium persulphate (HUGOUNENQ), A., i, 242.  
physico-chemical properties of (OKER-BLOM), A., ii, 326.  
spectral reactions of, in presence of formaldehyde (TOLLENS), A., i, 492.  
alkalinity of the (WALDVOGEL), A., ii, 116.  
composition of the, in fevers (v. STEJSKAL), A., ii, 404.  
calcium and sodium citrates in the coagulation of (SABBATANI), A., ii, 175.  
effect of intravenous injection of milk on the coagulability of the (CAMUS), A., ii, 116.  
the rennet and anti-rennet-like action of (FULD and SPIRO), A., ii, 67.  
action of chloroform on the reducing power of (LAMBERT and GARNIER), A., ii, 257.  
carbon monoxide in (NICLOUX), A., ii, 518.

- Blood**, maternal and foetal, amount of carbon monoxide in (NICLOUX), A., ii, 608.  
 colouring matters of, absorption spectra of (FORMÁNEK), A., ii, 711.  
 amount of fat in (BÖNNINGER), A., ii, 325.  
 human, fat of (ENGELHARDT), A., ii, 665.  
 relationship of iron in the, and in the urine (JOLLES and WINKLER), A., ii, 30.  
 formation of lactic acid in the (ASHER and JACKSON), A., ii, 563.  
 new reducing substance in the (MAYER), A., ii, 563.  
 nature of the sugar in (PAVY and SIAU), A., ii, 257.  
 the sugars of the (LÉPINE and BOULUD), A., ii, 610.  
 glycolytic decomposition of sugars in (PORTIER), A., ii, 116.  
 of animals deprived of their supra-renals (LEVIN), A., ii, 256, 518.  
 dextrose in normal hens' (SAITO and KATSUYAMA), A., ii, 404.  
 value of the hæmatoporphyrin test for the forensic detection of (IPSEN), A., ii, 296.  
 detection of carbon monoxide in (KOSTIN), A., ii, 281.  
 detection of hæmin in (RICHTER), A., ii, 296.  
 estimation of fat in (BÖNNINGER), A., ii, 325.  
 new instrument for the estimation of hæmoglobin in (GAERTNER), A., ii, 712.  
 estimation of reducing sugars in (MEILLÈRE and CHAPELLE), A., ii, 354.
- Blood corpuscles**, red, osmotic phenomena of (QUINTON), A., ii, 256.  
 mechanism of the action of (NOLF), A., ii, 256.  
 affinity of, for acids and alkalis, and the resistance so produced towards solanine (HÉDON), A., ii, 611.  
 permeability of, for  $\text{NO}_3$  and  $\text{SO}_4$  ions (HAMBURGER), A., ii, 175.  
 behaviour of, to certain reagents (STEWART), A., ii, 457.
- Blood rain**. See under Water.
- Blood serum**, immediate action of intravenous injection of (BRODIE), A., ii, 118.  
 origin of the alexin of (GENGOU), A., ii, 256.
- Blood vessels**, action of carbon dioxide on (BAYLISS), A., ii, 404.
- Blowpipe**, a kerosene oil (RICHARDSON), P., 1901, 151.
- Bog earths** of Bad-Sülze and Gölldenitz, composition of (HOFFMANN), A., ii, 188.
- Boilers**, analysis and softening of feed-water for (GIORGIS and FELICIANI), A., ii, 581.
- Boiling point**, new method for the exact determination of (SMITS), A., ii, 5.  
 modification of Landsberger's apparatus for the determination of the elevation of the (RIIBER), A., ii, 372.
- Boiling point curve** of mixtures of ethyl alcohol and water (NOYES and WARFEL), A., ii, 594.
- Boiling points** in the series of normal primary mono- and di-amines (HENRY), A., i, 128.  
 of binary mixtures, influence of foreign substances on the (SCHREINEMAKERS), A., ii, 445, 641.  
 of some organic liquids (LONGINESCU), A., ii, 640.
- Bone**, gluco-proteid of (HAWK and GIES), A., i, 298; ii, 520.
- Bone-black**. See Animal charcoal.
- Bone-fat**, analysis of (MENNICKE), A., ii, 138.
- Bone meal**, detection of mineral phosphates in (v. LORENZ), A., ii, 193.  
 the citric acid solubility of the phosphoric acid in (METHNER), A., ii, 278.  
 See also Agricultural Chemistry.
- Boracite**, influence of the presence of iron on the change in state of (RINNE), A., ii, 111.
- Borax**. See Sodium baborate.
- Bordoresen** (TSCHIRCH and BRÜNING), A., i, 221.
- Borimide** and its hydrochloride, and the action of ammonia and sulphur on (STOCK and BLIX), A., ii, 650.
- p*-**Borobenzoic acid** and its salts (MICHAELIS and RICHTER), A., i, 356.
- Boron** bromide, action of, on arsenic and antimony haloids and on phosphorus iodides (TARIBLE), A., ii, 153.  
 action of hydrogen arsenide on (STOCK), A., ii, 382.  
 action of hydrogen sulphide on (STOCK and POPPENBERG), A., ii, 237; (STOCK and BLIX), A., ii, 650.  
 compounds of, with phosphorus chlorides (TARIBLE), A., ii, 153.  
 hydrides (RAMSAY and HATFIELD), P., 1901, 152.
- Borides**, metallic, new (TUCKER and MOODY), P., 1901, 129.



**Boron:—**

- Boric acid**, volatility of, in steam (SKIRROW), A., ii, 448.  
 influence of, on metabolism in children (TUNNICLIFFE and ROSENHEIM; GRÜNBAUM), A., ii, 517.  
 Italian crude, analysis of (ZSCHIMMER), A., ii, 194.  
 estimation of (CARNIELLI), A., ii, 690.  
 test for, with turmeric paper, in food products (JENKINS and OGDEN), A., ii, 346.  
 estimation of, in borates of the alkalis and alkaline earths (WOLFF), A., ii, 346.  
 estimation of, in dressings (FRIEDRICH), A., ii, 204.  
 estimation of, in food (LÜHRIG), A., ii, 280.
- Perborates** (TANATAR; CONSTAM and BENNETT), A., ii, 314.  
 constitution of the (CONSTAM and BENNETT), A., ii, 17.
- Metathioboric acid** (STOCK and POPPENBERG), A., ii, 237.
- Boron nitride** (STOCK and BLIX), A., ii, 651.  
 sulphide, compounds of, with boron bromide and chloride, and with ammonia (STOCK and BLIX), A., ii, 650.
- Boron compounds, aromatic** (MICHAELIS), A., i, 355.
- Boronatrocalcite**. See Ulexite.
- Bos-osteoplasamide** (ÉTARD), A., i, 490.
- Brain tissue**, chemical composition of (WÜRNER and THIERFELDER), A., i, 176.
- Brandies**, marc and plum, analysis of (ZEGA), A., ii, 697.
- Brandy** flavouring essences, analysis of (BEYTHIEN and BOHRISH), A., ii, 285.  
 testing, the furfuraldehyde reaction in (WETZKE), A., ii, 285.
- Brassamine** and its salts and benzoyl derivative (KRAFFT and TRITSCHLER), A., i, 116.
- Brassic acid**, methyl ester, and chloride (MEYER), A., i, 628.
- Brassic chloride, amide, and nitrile** (KRAFFT and TRITSCHLER), A., i, 116.
- n-Brassylic acid** from undecenoic acid (KRAFFT and SELDIS), A., i, 115.  
 synthesis of (WALKER and LUMSDEN), T., 1196.
- Brazilic and Brazilinic acids** (GILBODY, PERKIN, and YATES), T., 1399; P., 1899, 27, 75, 241; 1900, 105.
- Brazilein** (HERZIG and POLLAK), A., i, 478.
- Brazilin**, constitution of (GILBODY, PERKIN, and YATES), T., 1396; P., 1899, 27, 75, 241; 1900, 105; (HERZIG and POLLAK), A., i, 478.
- Brewers' grains**, pentosans of (SCHÖNE and TOLLENS), A., ii, 414.
- Brewing materials**, test for arsenic in (CHAPMAN; ALLEN; and REPORT OF THE COMMISSION TO THE MANCHESTER BREWERS' CENTRAL ASSOCIATION), A., ii, 125; (THOMSON and SHENTON), A., ii, 345.
- Bridged rings**, synthetical formation of (PERKIN and THORPE), T., 729; P., 1900, 149; 1901, 110.
- Brögerite** from Raade, Norway (HOFMANN and HEIDEPRIEM), A., ii, 396.
- Bromal**, chemico-toxicological detection and estimation of (VITALI), A., ii, 480, 534.  
 diacetate ( $\beta\beta\beta$ -tribromoethylidene diacetate) (GABUTTI), A., i, 11.
- Bromelin proteolysis** (MENDEL and UNDERHILL), A., i, 355.
- Bromination** of alkylbenzenes (EDINGER and GOLDBERG), A., i, 23.
- Bromine**, refractive index and dispersion of (RIVIERE), A., ii, 1.  
 action of, on chlorine heptoxide and on perchloric acid (MICHAEL and CONN), A., ii, 152.
- Hydrobromic acid** (*hydrogen bromide*), action of, on carbohydrates (FENTON and GOSTLING), T., 361; P., 1901, 22.  
 slow action of, on glass (BERTHELOT), A., ii, 19.  
 action of silver on, and the inverse reaction (JOUNIAUX), A., ii, 601.
- Bromates**, detection of, by strychnine (FAGES), A., ii, 191.
- Bromoamides**, velocity of intramolecular migration of, under the influence of an alkali (VAN DAM and ABERSON), A., ii, 88.
- Bromoform**, chemico-toxicological detection and estimation of (VITALI), A., ii, 480, 534.
- Bronzite** from Bosnia (KIŠPATIĆ), A., ii, 321.
- Brostenite** from Roumania (PONT), A., ii, 26.
- Brucine**, action of bromine on (KIPPENBERGER), A., ii, 52.
- Brushite** from the Island of Mona, West Indies (KLEIN), A., ii, 558.
- Bryopogonic acid** and the *iso*-acid (HESSE), A., i, 595.
- Buchu leaves**, constituents of the oil of (KONDAKOFF and BACHTSCHIEFF), A., i, 334.
- Bucklandite**. See Epidote.

- Buckwheat.** See Agricultural Chemistry.
- Buds.** See Agricultural Chemistry.
- Bullocks.** See Agricultural Chemistry.
- Burette**, new form of (THIELE), A., ii, 575.
- Burette calibrator**, Ostwald's, improved (CUSHMAN), A., ii, 596.
- Butaldehyde diethylacetal**,  $\gamma$ -amino- (WOHL and SCHAFER), A., i, 514.
- iso***Butaldehyde**, condensation of, with aromatic ortho-aldehydes (HERZOG and KRUH), A., i, 213.  
condensation of, with aniline (FRIEDJUNG and MOSSLER), A., i, 641.  
condensation of, with crotonaldehyde (PLATTENSTEINER), A., i, 254.  
condensation of, with *p*-hydroxy- and *p*-ethoxy-benzaldehydes (HILDESHEIMER), A., i, 645.  
condensation of, with propaldehyde (KOHN), A., i, 255.
- iso***Butaldol**, condensation of, with aniline (FRIEDJUNG and MOSSLER), A., i, 641.
- Butane**,  $\alpha\gamma$ -diamino-, and its salts (TAFEL and WEINSCHENK), A., i, 72.  
 $\beta\gamma$ -bromoamino-, and its picrate (STRAUSS), A., i, 17.  
 $\alpha\delta$ -dibromo- and  $\alpha\delta$ -diiodo- (HAMONET), A., i, 247.  
or  $\alpha\delta$ -diiodo-, action of zinc on (HAMONET), A., i, 305.
- iso***Butane**,  $\beta\gamma$ -dibromo- (GUSTAVSON), A., i, 61.
- Butane- $\alpha\gamma$ -dicarboxy- $\beta$ -acetic acid** (SKRAUP), A., i, 227.
- Butanedicarboxylic acids.** See :—  
Adipic acid.  
Dimethylsuccinic acids.  
Ethylsuccinic acid.  
Methylglutaric acid.  
Propylmalonic acid.
- $\alpha\delta$ -**Butanediol** and its diacetyl derivative (HAMONET), A., i, 251.
- Butanetetracarboxylic acid**, dithio-, ethyl ester (WENZEL), A., i, 403.  
See also  $\beta$ -Methylpropane- $\alpha\beta\gamma\gamma$ -tetracarboxylic acid.
- Butanol.** See Butyl alcohol.
- Butinene** (*ethylacetylene*) (WISLICENUS), A., i, 1; (WISLICENUS and SCHMIDT), A., i, 2.
- Butinene** (*crotonylene*, *dimethylacetylene*) and its *di*- and *tetra*-bromide and hydrobromide (WISLICENUS), A., i, 1; (WISLICENUS and SCHMIDT; WISLICENUS, TALBOT, and HENZE), A., i, 2.  
formation of (WISLICENUS and HENZE), A., i, 4.
- Butter**, cryoscopic distinction between margarine and (PESCHGES), A., ii, 630.  
analysis of (REYCHLER), A., ii, 208; (V. KLENZE), A., ii, 292.  
analysis of, and the Reichert-Meissl figure (SIEGFELD), A., ii, 482.  
Dutch, the Reichert-Meissl number of (KIRCHNER and RACINE), A., ii, 137.  
influence of the season and feeding on the Reichert-Meissl number of (SWAVING), A., ii, 587.  
detection of coconut oil in (INDEMANS), A., ii, 78; (RANWEZ), A., ii, 702.  
apparatus for the simultaneous estimation of fat and water in (PODA), A., ii, 482.  
estimation of, in margarine (REPORT OF JOINT COMMITTEE), A., ii, 77.  
See also Agricultural Chemistry.
- n*-**Butyl alcohol**, synthesis of (GUERBET), A., i, 625.  
 $\gamma$ -amino-, and the action of formaldehyde and nitrous acid on, and its dibenzoyl derivative (HENRY), A., i, 16.  
 $\delta$ -amino- (HENRY), A., i, 68.
- iso***Butyl alcohol**, influence of, as solvent, on the rotation of ethyl tartrate (PATTERSON), T., 478; P., 1901, 40.
- sec*-**Butyl alcohol**,  $\gamma$ -amino- (*2:3-amino-butanol*) and its platinichloride (STRAUSS), A., i, 17.
- d-sec*-**Butylamine** and its hydrochloride and platinichloride (GADAMER), A., i, 582.
- iso***Butylanthranilic acid** (MEYER), A., i, 191.
- iso***Butylbenzene**, *nonabromo*- (BODROUX), A., i, 519, 523.
- Butylcinnamic acids**,  $\alpha$ - and *iso*- (MICHAEL and HARTMAN), A., i, 358.
- iso***Butylene**, action of hypochlorous acid on (KRASSUSKY), A., i, 246.  
dibromide, action of, on benzene (BODROUX), A., i, 523.
- iso***Butylenechlorohydrins**, isomeric (MICHAEL), A., i, 625.
- Butylene glycol**, diamyl derivative (HAMONET), A., i, 187.
- $\psi$ -**Butylenes** (*s-dimethylethylenes*), isomeric, and their bromo-derivatives and  $\beta$ -bromomonocarboxylic acids (WISLICENUS; WISLICENUS and SCHMIDT), A., i, 1; (WISLICENUS, TALBOT, and HENZE), A., i, 2.
- Butylene- $\psi$ -thiocarbamide** and its picrate and platinichloride (STRAUSS), A., i, 17.

*i*-Butyridenedianiline anhydrosulphite (EIBNER), A., i, 378.

*β*-Butyridenecyclopentene (methylethylfulvene) diperoxide (ENGLER and FRANKENSTEIN), A., i, 658.

2-*iso*Butyl-4-ketodihydroquinazoline (GOTTHELF), A., i, 765.

*p*-*iso*Butyloxyphenyl-carbamide and -thiocarbamide (SPIEGEL and SABATH), A., i, 534.

*iso*Butyramide, nitro- (PILOTY and SCHWERIN), A., i, 517.

Butyric acid,  $\alpha$ - and  $\beta$ -amino-, ethyl esters, and the hydrochloride and picrate of the  $\alpha$ -acid (FISCHER), A., i, 192.

$\beta$ -amino- and its ethyl ester, benzoyl derivative, and phenylcarbimide (FISCHER and ROEDER), A., i, 295.

$\alpha\gamma$ -diamino-, synthesis of, and its salts and dibenzoyl derivative (FISCHER), A., i, 674.

$\alpha$ -iodo- (ZERNOFF), A., i, 185.

*iso*Butyric acid, nitroso-, its ethyl ester, amide, nitrile, and amidine (PILOTY and SCHWERIN), A., i, 516.

Butyrolactonecarboxylic acid, ethyl ester (TRAUBE and LEHMANN), A., i, 501.

Butyronitrile, latent heat of vaporisation and specific heat of (LUGININ), A., ii, 145.

Butyro-refractometer, Zeiss' (WHITE), A., ii, 207.

Butyrylacetacetic acid, ethyl ester (BLAISE), A., i, 363.

Butyrylacetacetic acid, methyl ester (BONGERT), A., i, 653.

isomeric methyl esters (BOUVEAULT and BONGERT), A., i, 311.

action of hydrazine and phenylhydrazine on (BONGERT), A., i, 409.

nitration of (BOUVEAULT and BONGERT), A., i, 500.

Butyrylanilide,  $\alpha$ -cyano- (HALLER and BLANC), A., i, 261.

Butyrylanilides, *n*- and *iso*-,  $\alpha\beta$ -dibromo- (AUTENRIETH and SPIESS), A., i, 199.

Butyryl*iso*butyric acid, ethyl ester (BLAISE), A., i, 252.

$\omega$ -Butyryl-2:4-diethoxyacetophenone (v. KOSTANECKI, TAMBOR, and WINTER), A., i, 559.

$\beta$ -Butyrylglutaric acids, *n*- and *iso*-, and their salts and ketodilactones (FITTING and GUTHRIE), A., i, 121.

$\beta$ -Butyryloxycrotonic acid, methyl ester (BOUVEAULT and BONGERT), A., i, 312.

Butyrylphenylhydrazine (BONGERT), A., i, 409.

## C.

Cacodylic acid, physiological action of, and its detection in urine (HEFFTER), A., ii, 464.

elimination and toxicological detection of (BARTHE and PÉRY), A., ii, 364.

derivatives of (ASTRUC and MURCO), A., i, 144.

Cactaceæ, occurrence of alkaloids and saponins in (HEFFTER), A., i, 736; (HEYL), A., i, 738.

Cadmium, melting point of (HOLBORN and DAY), A., ii, 85.

Cadmium amalgams (ROOZEBOOM), A., ii, 507.

Cadmium chloride, compounds of, with cupric oxide (MAILHE), A., ii, 601. fluoride, solubility of (JAEGER), A., ii, 386.

haloids, compounds of, with aromatic amines and with pyridine (TOMBECK), A., i, 164.

oxide, natural (NEUMANN and WITTICH), A., ii, 605; (WITTICH and NEUMANN), A., ii, 663.

suboxide (TANATAR), A., ii, 553.

selenide and its double salt with cadmium iodide (FONZES-DIACON), A., ii, 60.

sulphate, heat of solution of (HOLBOER), A., ii, 226.

Cadmium, precipitation of, by hydrogen sulphide in acid solution (STÜLL), A., ii, 625.

Cæsium bromide, fluoride, hydrogen fluoride, and *mono*- and *di*-chromates (CHABRIÉ), A., ii, 314.

antimony bromide and chloride (WELLS and METZGER), A., ii, 661.

molybdenyl chloride (NORDENSKJÖLD), A., ii, 454.

thorium chlorides (WELLS and WILLIS), A., ii, 660.

antimony fluorides and iodide (WELLS and METZGER), A., ii, 514.

tellurium fluoride (WELLS and WILLIS), A., ii, 652.

periodate and hydrogen iodate-periodate (WELLS), A., ii, 653.

bismuth and ferric nitrates (WELLS, BEARDSLEY, JAMIESON, and METZGER), A., ii, 653.

acid nitrates (WELLS and METZGER), A., ii, 652.

nitriopentachloro-osmate (WERNER and DINKLAGE), A., ii, 661.

sulphate, double salt of, with indium sulphate (CHABRIÉ and RENGADE), A., ii, 102.

rhodium alum (PICCINI and MARINO), A., ii, 392.

- Cæsium sulphur compounds** (CHABRIÉ), A., ii, 600.
- Cæsium**, precipitation of, from its solutions (WELLS), A., ii, 652.
- Caffeine** and the salts it forms (PAUL), A., i, 341.  
localisation of, in tea leaves (SUZUKI), A., ii, 680.  
amount of, in different parts of the tea plant (SUZUKI), A., ii, 679.  
synthesis of, from cyanoacetic acid (TRAUBE), A., i, 54.  
ethobromide (ROSSOLIMO), A., i, 480.  
ethochloride and ethioidide (ROSSOLIMO), A., i, 161.  
influence of, on nitrogenous excretion (RIBAUT), A., ii, 565.  
influence of, on the excretion of purine substances in the urine (KRÜGER and SCHMID), A., ii, 463.  
detection of (NESTLER), A., ii, 432.
- Caffetannic acid**, and its salts and hexaacetyl derivative (RUNDQVIST), A., i, 724.
- Calamus oil**, crystalline compound from (v. SODEN and ROJAHN), A., i, 395; (THOMS and BECKSTROEM), A., i, 396.
- Calaverite** from Western Australia (KRUSCH), A., ii, 393.  
See also Tellurides.
- Calcareous concretions** of Kettle Point, Ontario (DALY), A., ii, 516.
- Calcite**, simple method of distinguishing aragonite and (MEIGEN), A., ii, 692.
- Calcium**, atomic weight of (HERZFELD and STIEPEL), A., ii, 239.
- Calcium amalgam** (SCHÜRGER), A., ii, 97.
- Calcium compounds in soil** (MEYER), A., ii, 273.
- Calcium aluminates**, sulpho-aluminates, and silicates, action of magnesium salts, sodium chloride, and of sea water on (REBUFFAT), A., ii, 385.  
borate (OUVRARD), A., ii, 158.  
carbide, action of, on fatty alcohols (LEFEBVRE), A., i, 441.  
action of a solution of formaldehyde on (VANINO), A., i, 125.  
reducing action of (v. KÜGELGEN), A., ii, 98, 448; (NEUMANN), A., ii, 98.  
carbonate. See Agricultural Chemistry and Conchite.
- chlorate, decomposition of (SODEAU), T., 247; P., 1900, 209.
- chloride, indices of refraction of solutions of (BREMER), A., ii, 141.  
electrolysis of (TUCKER and MOODY), A., ii, 98.
- Calcium chloride**, combination of, with ammonia in aqueous solution (DAWSON and McCRAE), T., 1069; P., 1901, 177.  
double salt of, with antimony pentachloride (WEINLAND and SCHLEGELMILCH), A., ii, 660.  
apparatus, new (HENNING), A., ii, 420.  
chromates, solubility of, in water (DIETZ, FUNK, v. WROCHEM, and MYLIUS), A., ii, 104.  
oxide, crystallised (JOUVE), A., ii, 384.  
oxide (*lime*), solubility of, in water, at different temperatures (GUTHRIE), A., ii, 315.  
estimation of soluble, in London purple (HAYWOOD), A., ii, 126.  
estimation of, in soils (HOTTER), A., ii, 623.  
phosphate. See Agricultural Chemistry.
- sulphide, preparation and crystalline form of (MÜLLER), A., ii, 60.
- Calcium organic compounds**:—  
ferrieyanides (FISCHER and MÜLLER), A., i, 455.  
haloids, compounds of, with aromatic amines (TOMBECK), A., i, 135.
- Calcium, estimation of**:—  
estimation of assimilable (MEYER), A., ii, 273.  
estimation of, in presence of much iron oxide (PELLET), A., ii, 477.  
estimation of, as the oxalate (PETERS), A., ii, 692.  
estimation of, in high-grade ferro-silicon (GRAY), A., ii, 578.  
estimation of, in soil by the citrate method (PASSON), A., ii, 347.  
estimation of, in waters (GASSELIN), A., ii, 133; (WINKLER), A., ii, 347.
- Calculi** from the pancreas, composition of (LEGRAND), A., ii, 566.
- Callitrollic acid** and its lactone (HENRY), T., 1158; P., 1901, 187.
- Calorific value** of fuels, determination of the (REBUFFAT), A., ii, 373.  
Berthier's method for determining the (ANTONY and DI NOLA), A., ii, 6.
- Camphanamic acid** and the action of sodium hypobromite and sodium hydroxide on (LAPWORTH and LENTON), T., 1290; P., 1901, 38.
- Camphanamide**, preparation of, and action of dehydrating agents on (LAPWORTH and LENTON), T., 1289; P., 1901, 38.

- Camphane**, 1-bromo-1-nitro-, hydroxylamine derivative of, its salts and carbamide and benzoyl derivatives, and the action of caustic soda and of nitrous acid on, and oxidation of (FORSTER), T., 654; P., 1901, 88.
- 2-bromo-1-nitro-, 1:2-dibromo-1-nitro-, and 2-iodo-1-nitro- (FORSTER), T., 647; P., 1901, 85.
- dichloro-, action of sulphuric acid on (BREDT, ROCHUSSEN, and MONHEIM), A., i, 217.
- Camphane anhydride**, 1:1-chloronitro-, and its isomide and benzoyl and nitro-derivatives, and hydroxylamino-derivative and its benzoyl compound (FORSTER and ROBERTSON), T., 1006; P., 1901, 169.
- Camphanic acid**, constitution of (LAPWORTH and LENTON), T., 1284; P., 1901, 37.
- Camphanonitrile**, and the action of alkalis on (LAPWORTH and LENTON), T., 1291; P., 1901, 38.
- Camphene** and its bromo-derivatives, hydrobromide, hydrochloride, and alcoholate (SEMMLER), A., i, 90.
- action of nitric anhydride on, and constitution of (DEMJANOFF), A., i, 554.
- hydride (KONDAKOFF and LUTSCHININ), A., i, 282.
- relation of, to artificial camphor (KONDAKOFF), A., i, 646.
- Camphene**, 1-amino-, and its salts and benzoyl, benzylidene, and phenyl-carbamide derivatives, and 1-nitro- (FORSTER), T., 646; P., 1901, 85.
- Campheride**, triacetyl, trimethyl, and di- and tri-ethyl derivatives of (TESTONI), A., i, 93.
- Campherol** (PERKIN and WILKINSON), P., 1900, 182; (PERKIN), P., 1901, 87.
- Camphoecean ring**, resolution of the (BREDT, ROCHUSSEN, and MONHEIM), A., i, 218.
- Camphoformeneaminocarboxylic acid** and its amide (TINGLE), A., i, 632.
- Camphoformene-methylaminocarboxymethylamide**, and -ethylaminocarboxyethylamide (TINGLE), A., i, 633.
- Campholytic acid**, constitution of (FORSTER), T., 110; (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 6; (BLANC), A., i, 10.
- r*- $\alpha$ -Campholytic acid and  $\Delta^5$ -Campholytic acid and its amide (NOYES and BLANCHARD), A., i, 664.
- Campholytic acids**, isomeric, and their oxidation products (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 5.
- See also *iso*Lauronic acid.
- Campholytolactone**, and the acid,  $C_9H_{16}O_3$ , from its hydrolysis (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 5; (BLANC), A., i, 10.
- iso*Campholytonic acid (*isolauronic acid*) (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 6.
- Camphonic acid**, formula of (LAPWORTH and LENTON), P., 1901, 148.
- Camphononic acid**, formation of (LAPWORTH and LENTON), T., 1287; P., 1901, 38.
- formula of (LAPWORTH and LENTON), P., 1901, 149.
- Camphopyric acid**, and its anhydride and anilide (WALLACH and NEUMANN), A., i, 333.
- Camphor** excreted by *Polyzonium rosabum* (COOK), A., ii, 179.
- constitution of (ASCHAN), A., i, 477.
- artificial, constitution of (KONDAKOFF), A., i, 646.
- action of sulphuric acid on (BREDT, ROCHUSSEN, and MONHEIM), A., i, 217.
- combination of, with  $\beta$ -hydroxy-naphthaldehyde (HELBRONNER), A., i, 600.
- estimation of, in camphor oil (LÖHR), A., ii, 361.
- Camphor**,  $\alpha$ -bromo-, racemisation of (KIPPING), T., 370; P., 1901, 32.
- $\alpha$ -dibromo-, constitution of the acids from, and the action of moist silver compounds on (LAPWORTH and LENTON), P., 1901, 148.
- Camphorenic acid**, biomo-, formula of (LAPWORTH and LENTON), P., 1901, 148.
- Camphor group**, syntheses of compounds of the, in the organism (HILDEBRANDT), A., ii, 180, 669.
- Camphoric acid**, constitution of (BLANC), A., i, 10.
- phenetide (GOLDSCHMIDT), A., i, 590.
- apo*Camphoric acid (*mesocamphopyric acid*), synthesis of (KOMPPA), A., i, 668.
- Camphoric anhydride**, action of aluminium chloride on (LEES and PERKIN), T., 332; P., 1898, 111; 1899, 23; 1900, 18; (PERKIN and YATES), T., 1373.
- bromo-, constitution of (LAPWORTH and LENTON), T., 1284; P., 1901, 38.
- $\alpha$ -Camphornitrilamide and its oxidation products (TIEMANN and TIGGES), A., i, 20.
- $\beta$ -Camphornitrilic acid, constitution of, and the products of oxidation of its amide (TIEMANN and TIGGES), A., i, 19.

- Camphornitrilic acids**,  $\alpha$ - and  $\beta$ - (TIE-MANN, LEMME, and KERSCHBAUM), A., i, 18.
- Camphor oil**, estimation of camphor in (LÖHR), A., ii, 361.
- isocamphoronic acid**, synthesis of (PERKIN), P., 1900, 214.
- Camphoroxalic acid**, derivatives (TINGLE), A., i, 632.
- Camphoroxime**, mixed crystals of (ADRIANI), A., ii, 230.  
reactions of (KONOWALOFF), A., i, 281.
- Camphorquinone**, preparation of, and its *p*-bromophenylhydrazone and semicarbazone (LAPWORTH and CHAPMAN), T., 380; P., 1901, 28.
- Camphor ring**, disruption of the (TIE-MANN, LEMME, and KERSCHBAUM), A., i, 18.
- Camphor- $\alpha$ - and - $\alpha'$ -sulphonic acids** and their amides, anilides, bromides, chlorides, and piperidides, and bromo- and chloro-derivatives (ARMSTRONG and LOWRY), P., 1901, 182.
- Canarin** (GOLDBERG), A., i, 193, 516, 677.  
preparation of (PAWLEWSKI), A., i, 71.
- Cane-sugar**. See Sucrose.
- Cantharidin** and cantharidin-immunity (ELLINGER), A., ii, 180.  
nitrogen derivatives of (MEYER), A., i, 221.
- Caoutchouc** (*indiarubber*), action of nitrous acid on (HARRIES), A., i, 734.
- Capaloin**. See Uganda-aloin.
- Capillarity**, theory of (BAKKER), A., ii, 88, 374.  
of aqueous sucrose solutions (DOMKE, HARTING, and PLATO), A., i, 189.
- Capillary constants** of organic liquids (GUYE and BAUD), A., ii, 437, 543.
- Capillary-electrical phenomena** (PALMAER), A., ii, 370.
- Capillary layer** between the homogeneous phases of liquid and vapour, theory of the (BAKKER), A., ii, 88.
- Capillary phenomena**, deductions from (EINSTEIN), A., ii, 228.
- Caproic acid**. See Hexoic acid.
- Caramelan**, decomposition products of (STOLLE), A., i, 673.
- Carbamic acid**, methyl-*n*-butylcarbonyl ester (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 663.
- Carbamide**, formation of, by the oxidation of albumin (HUGOUNENQ), A., i, 491; (SCHULZ), A., i, 780.  
as the product of oxidation of nitrogenous substances (JOLLES), A., i, 30, 262, 583.  
formation of, by the oxidation of physiological nitrogenous substances (FALTA), A., ii, 705.
- Carbamide**, spontaneous conversion of uric acid into (GIGLI), A., i, 677.  
relation between the solubility and heat of solution of (CAMPETTI), A., ii, 642.  
decomposition of, by urease, and by katabolism (BEYERINCK), A., ii, 264.  
condensation of, with acetone (WEIN-SCHENK), A., i, 583.  
action of, on oxalacetic acid (FENTON and JONES), T., 96; P., 1900, 205.  
condensation of, with sugars (SCHOORL), A., i, 258.  
action of aromatic sulphonic chlorides on (REMSEN and GARNER), A., i, 270.  
action of the chlorides of *o*-sulpho- and *p*-nitro-*o*-sulpho-benzoic acids on (HOLMES), A., i, 271.  
oxygen ethers of (McKEE), A., i, 757.  
See also Urea.
- Carbamide**, nitro-, electrolytic reduction of (HOLROYD), T., 1326; P., 1901, 197.  
thio-. See Thiocarbamide.
- Carbaminoazocyanide** (*aminohydroxy-methyleyanotriazen*) (HANTZSCH and VAGT), A., i, 195.
- Carbaminodiacetic acid**, diethyl ester (FISCHER), A., i, 192.
- Carbaminoglycylglycine**, ethyl ester (FISCHER and FOURNEAU), A., i, 675.
- Carbaminoiniminoazoisimide** and its salts (HANTZSCH and VAGT), A., i, 195.
- Carbaminophenyliminodisulphide** and its hydrobromide, hydrochloride, bromo-derivative and tetrabromide (HUGERSHOFF), A., i, 757.
- 1-Carbamino-5-pyrazolone-3-*p*-nitro-benzeneazoacetic acid**, ethyl ester (BÜLOW and HÖPFNER), A., i, 241.
- Carbanilinoacetophenoneoxime**,  $\omega$ -chloro- and  $\omega$ -bromo, and *m*-nitro- of the bromo-compound (KORTEN and SCHOLL), A., i, 549.
- Carbanilnodi- $\alpha$ -naphthylethylene-diamine** (SENIER and GOODWIN), T., 260; P., 1900, 229.
- Carbanilphenylethylideneoxycyclo-triazan** (VOSWINCKEL), A., i, 53.
- Carbazine acids**, *dithio*-, action of thiocarbimides on (BUSCH and WOLPERT), A., i, 233.
- Carbazole**, derivatives of (RUFF and STEIN), A., i, 620.  
bromine derivatives of (VAUBEL), A., i, 652.
- Carbazoles**, formation of (JAPP and MAITLAND), P., 1901, 176.
- Carbethoxyglycylglycine**, ethyl ester (FISCHER and FOURNEAU), A., i, 675.

**Carbimides**, thio-. See Thiocarbimides.  
**Carbiminoacetyl-*p*-toluidide**, thio- (FRERICHS and BECKURTS), A., i, 80.  
**Carbodiphenylimide** (SCHALL), A., i, 766.  
**Carbofenchonone** (WALLACH and v. WESTPHALEN), A., i, 332.  
**Carbohydrate metabolism** in winter leaves (CZAPEK), A., ii, 571.  
**Carbohydrates** of *Chondrus crispus* (SEBOR), A., i, 15.  
 reserve, from *Lilium* bulbs (PARKIN), A., ii, 414.  
 of the albumen of the seeds of *Phoenix canariensis* (BOURQUELOT and HÉRISSEY), A., ii, 619.  
 refraction of aqueous solutions of (STOLLE), A., i, 368, 507.  
 action of various Bacteria on (HARDEN), T., 610; P., 1901, 57.  
 action of formaldehyde and benzaldehyde on (ALBERDA VAN EKENSTEIN), A., i, 120.  
 action of hydrogen bromide on (FENTON and GOSTLING), T., 361; P., 1901, 22.  
 behaviour of, with hypochlorites (BRAUTIGAM), A., i, 671.  
 influence of sodium fluoride on the action of seminaise on the, in the albumen of seeds (HÉRISSEY), A., ii, 570.  
 influence of, on the production of proteids in plants (SCHULZE), A., ii, 333.  
 selection of, by yeasts during alcoholic fermentation (KNECHT), A., ii, 568.  
 action of, on the vegetation of *Nostoc punctiforme* (BOUILHAC), A., ii, 571.  
 salivary digestion of, in the stomach (HENSAY), A., ii, 666.  
 amount of, in normal and diabetic urine (ROSIN; v. ALFTHAN), A., ii, 179.  
 the so-called furfuraldehyde tests for (NEUBERG), A., ii, 356.  
 estimation of, in human faeces (STRASBURGER), A., ii, 357.  
**Carbohydrates**. See also :—  
 Acetylchloro-dextrose, -galactose, and -lactose.  
 Apiose.  
 Arabinoses.  
 Bassorin.  
 Cellose.  
 Celluloses.  
 Dextrin.  
 Dextrose.  
*l*-Erythrose.

LXXX. ii.

**Carbohydrates**. See :—

*d*-Fructose.  
 Galactose.  
 Gentianose.  
 Gentiobiose.  
 Glucose.  
 Glycogen.  
 Graminin.  
 Hydrocellulose.  
 Inulin.  
 Lactose.  
 Levulose.  
 Maltose.  
*iso*Maltose.  
 Mannitol.  
 Mannose.  
 Melitriose.  
 Oxycelluloses.  
 Pectins.  
 Pentosans.  
 Pentoses.  
 Raffinose.  
 Rhamnose.  
 Rhodose.  
 Starch.  
 Sucrose.  
*l*-Thiose.  
 Tragacanthose.  
 Triacetylchloroarabinose.  
 Trimethyltriase.  
**Carbohydrazides** of the dihydroxy-benzenes, condensation of, with mixed aromatic and fatty ketones (EINHORN and ESCALES), A., i, 652.  
**Carbolic acid**, estimation of, in dressings (FRERICHS), A., ii, 203.  
 See also Phenol.  
**Carbon**, trivalent (GOMBERG), A., i, 77, 319, 374, 638; (NORRIS), A., i, 198.  
 formation of, during the electrolysis of ammonium oxalate (VERWER), A., ii, 693.  
 spectra of (LEHMANN), A., ii, 142.  
 direct union of, with hydrogen (BONE and JERDAN), T., 1042; P., 1901, 162.  
 reducing action of, on metallic compounds (BOUDOUARD), A., ii, 314.  
 analogies between nitrogen, oxygen and, in similar linkings (ERLENMEYER), A., i, 61.  
**Carbon chloride**,  $C_{12}Cl_{14}$  (FRANCESCO and RECCHI), A., i, 721.  
**Carbon monoxide** (*carbonic oxide*), and oxygen, reactions of, in presence of alkalis (BERTHELOT), A., ii, 17.  
 action of cuproussalts on (BERTHELOT), A., i, 493.  
 behaviour of, towards silver (BERTHELOT), A., ii, 97.

61

- Carbon monoxide** (*carbonic oxide*) in blood (NICLOUX), A., ii, 518.  
 poisoning, treatment of, by oxygen (GRÉHANT), A., ii, 409.  
 passage of, from mother to fœtus (NICLOUX), A., ii, 608.  
 detection of, in air (ZUNTZ and KOSTIN), A., ii, 280; (KOSTIN), A., ii, 281.  
 detection of, in blood (KOSTIN), A., ii, 281.
- Carbon dioxide** (*carbonic anhydride*), conductivity of (TOWNSEND and KIRKBY), A., ii, 434.  
 latent heat of evaporation of (CROMPTON), P., 1901, 62.  
 decomposition of, under electrical strain (COLLIE), T., 1063; P., 1901, 168.  
 density of, in the solid and liquid state (BEHN), A., ii, 95.  
 action of, on aqueous solutions of ferro- and ferri-cyanides (MATUSCHEK), A., i, 677.  
 reaction of, with hydrogen (BOUDOUARD), A., ii, 383.  
 produced by *Bacillus pyocyaneus* (PAKES and JOLLYMAN), T., 325; P., 1900, 189.  
 evolution of, from the bacterial decomposition of formic acid (PAKES and JOLLYMAN), T., 386; P., 1901, 29.  
 evolution of, by yeast (HARDEN and ROWLAND), T., 1228; P., 1901, 189.  
 assimilation of, by hyphomicrobium and nitromicrobium (STUTZER), A., ii, 267.  
 influence of, on fermentation (ORTLOFF), A., ii, 262.  
 action of, on smooth muscle (CLEGHORN and LLOYD), A., ii, 255.  
 action of, on blood vessels (BAYLISS), A., ii, 404.  
 improved Geissler potash apparatus for the absorption of (WETZEL), A., ii, 74.  
 analysis of mixtures of carbonyl sulphide, hydrogen sulphide and (HEMPFEL), A., ii, 651.  
 estimation of, in air (HALDANE), A., ii, 477.  
 estimation of, in water (ELMS and BENEKER), A., ii, 627.  
 estimation of, in natural waters (WINKLER), A., ii, 696.
- Carbon disulphide**, compound of, with aluminium bromide and bromine (PLOTNIKOFF), A., ii, 316.
- Carbon, estimation of:—**  
 estimation of, in ferrochrome (BLAIR), A., ii, 74.
- Carbon, estimation of:—**  
 estimation of, in iron and steel (SCHMITZ), A., ii, 691.  
 apparatus for the estimation of, in iron and steel (GÜCKEL), A., ii, 39.  
 rapid estimation of, in steel (JOB and DAVIES), A., ii, 127.  
 organic, estimation of, in water (KÖNIG), A., ii, 351.
- Carbon combustions**, special crucible for (SHIMER), A., ii, 477.
- Carbon compounds**, spectra of (SMITH-ELLS), A., ii, 366; (BALY and SYERS), A., ii, 633.  
 asymmetric, rotation of substituted (GUYE), T., 476; P., 1901, 48.  
 colourless, new method of testing, for absorption of light (PINNOW), A., ii, 368.
- Carbonic acid**, constitution of the hydroxyl groups of (CAZENEUVE), A., i, 497.
- Carbonic diethyl ether**, imino-, preparation of (LANDER), T., 702; P., 1901, 61.
- Carbonyl chloride** (*phosgene*), action of, on diamines (SCHOLTZ and JAROSS), A., i, 485.  
 action of lead thiocyanate on (DIXON), T., 552; P., 1901, 52.  
 new reaction of (KÜHN), A., i, 42.
- Carbonyl sulphide** and analysis of mixtures of hydrogen sulphide, carbon dioxide and (HEMPFEL), A., ii, 651.
- Carbonyl-dicarbamide**, -di- $\alpha$ - and - $\beta$ -naphthylcarbamides, -diphenylcarbamide, and -di-*p*-tolylcarbamide (PICKARD and CARTER), T., 842; P., 1901, 123.
- Carbonyl-*p*-tolylcarbazine acid**, ethyl ester (BUSCH), A., i, 489.
- Carbostyryl**, physiological action of (v. FENYVESSY), A., ii, 31.  
 nitro- and bromonitro-derivatives (DECKER), A., i, 654.
- ab-Carboxyamyl-phenyl-** and -*o*-tolylthiocarbamide (DORAN), T., 914; P., 1901, 130.
- Carboxyamylthiocarbimide** and its derivatives (DORAN), T., 906; P., 1901, 130.
- Carboxyanthranilic acid**, dimethyl and diethyl esters (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 709.
- 3-*p*-Carboxybenzoylpicolinic acid**, and its dimethyl ester and cadmium salt (FULDA), A., i, 226.
- o*-Carboxycinnamic acid**, and its dibromide (LEUPOLD), A., i, 711.
- Carboxyhæmoglobin**. See under Hæmoglobin.



- 2-Carboxy-5-methoxyphenoxyacetic acid** and its salts (GILBODY, PERKIN, and YATES), T., 1400; P., 1899, 27, 75, 241; 1900, 105.
- Carboxymethylphenylsemithiocarbazide** (DORAN), T., 911; P., 1901, 130.
- Carboxymethylthiocarbamic acid, esters** (DORAN), T., 912; P., 1901, 130.
- ab*-**Carboxymethylthiocarbamide** and its atomic and fatty alkyl derivatives (DORAN), T., 908; P., 1901, 130.
- Carboxymethylbutylthiocarbimide** and its derivatives (DORAN), T., 906; P., 1901, 130.
- Carboxymethylthiourea** and **Carboxymethylpiperidylthiourea** (DORAN), T., 910; P., 1901, 130.
- Carboxyphenylbutyrolactoneacetic acid** and its salts (FITTIG and GOTTSCHÉ), A., i, 123.
- Carboxyphenylhydrazonocynoacetic acid** and its methyl ethyl ester and salts (LAX), A., i, 231.
- o*-**Carboxyphenylmercuric hydroxide** (DIMROTH), A., i, 440.
- Carminone compounds** (LIEBERMANN and LANDAU), A., i, 545.
- Carnotite**, analysis of (FRITCHLE), A., ii, 200.
- Carob**. See Agricultural Chemistry.
- Carone**, physiological action of (RIMINI), A., ii, 522.
- Caro's acid** or **reagent**, composition and reaction of (BACH), A., ii, 14.  
See also Persulphuric acids under Sulphur.
- Carpinic acid**, bromo-, attempts to prepare (JOWETT), T., 598; P., 1901, 57.
- Carrots**. See Agricultural Chemistry.
- Carvacrol**, action of bromine on, in presence of aluminium bromide (BODROUX), A., i, 697.  
sodium derivative, action of ethyl chlorofumarate on (RUHEMANN), T., 919; P., 1901, 155.
- Carvacroxyfumaric acid** and its ethyl ester (RUHEMANN), T., 920; P., 1901, 155.
- 1-Carvacroxyethylbenzoxazole** (COHN), A., i, 752.
- 2-Carvacroxyethyl-5-ethoxybenzimidazole** and its picrate (COHN), A., i, 352.
- Carvacrylglucoside**, preparation of (RYAN and MILLS), T., 706; P., 1901, 90.
- Carvenone**, production of (BREEDT, ROCHUSSEN, and MONHEIM), A., i, 218.
- Carvestrene**, ortho- and  $\psi$ - (SEMMLER), A., i, 331.
- Carvone**, auto-oxidation of (HARRIES), A., i, 551.
- Carvone**, estimation of, in ethereal oils (WALTHER), A., ii, 49.
- Carvotanacetone** and its derivatives (HARRIES), A., i, 551.
- Cascarilla oil**, constituents of (FENDLER), A., i, 219.
- Cascarillic acid** and its amide, bromide, and salts (FENDLER), A., i, 219.
- Casease**, production of, by a parasitic *Streptothrix* (BODIN and LENORMAND), A., i, 624.
- Casein**, action of nascent chlorine on (HABERMANN and EHRENFELD), A., i, 622.  
hydrolysis of, by hydrochloric acid (FISCHER), A., i, 780.  
as food (BACKHAUS and BRAUN), A., ii, 529.  
paranucleic acid from (SALKOWSKI), A., i, 242, 434.
- Casein**, chloro-, and its decomposition products with fuming hydrochloric acid (PANZER), A., i, 780.
- Cassia flowers**, oil of (SCHIMMEL & Co.), A., i, 394.
- Castor oil**, distillation of (THOMS and FENDLER), A., i, 252.
- Catalase**, a new enzyme (LOEW), A., i, 435.
- Catalysis**. See under Affinity.
- Catechol** (*pyrocatechol*, 1:2-*dihydroxybenzene*), diethyl ether, 4-amino- and its acetyl derivatives, and 4-nitro- (WISINGER), A., i, 205.  
methylene ether, *p*-amino-, and its hydrochloride and acetyl derivative (RUPE and v. MAJEWSKI), A., i, 104.
- Catechol**, chloro- (JACKSON and KOCH), A., i, 597.
- Catha edulis* (BEITTER), A., ii, 268.
- Cathode rays**. See Photochemistry.
- Cattle**. See Agricultural Chemistry.
- Cedar-nut oil** (v. SCHMOELLING), A., ii, 136.
- Celestite** from Marienstein, Bavaria (v. SUSTSCHINSKY), A., ii, 605.  
from Ontario (HOFFMANN), A., ii, 319.
- Cellose** from cellulose and its acetyl derivative (SKRAUP and KÖNIG), A., i, 370.
- Cells**. See Electrochemistry.
- Cellulose** (TOLLENS), A., i, 453; (WOLFFENSTEIN and BUMCKE), A., i, 582.  
cotton, mercerised, or precipitated, properties of (VIGNON), A., i, 16.  
ketonic constitution of (FENTON and GOSLING), T., 365; P., 1901, 22; (CROSS and BEVAN), T., 366; P., 1901, 22.  
behaviour of, to nitrating agents, and mixed esters of (CROSS, BEVAN, and JENKS), A., i, 672.

- Cellulose**, sugars from (FENTON), P., 1901, 166.  
sodium, constitution of, and action of aqueous ammonia on (THIELE), A., i, 634.  
xanthates (CROSS and BEVAN), A., i, 452.  
estimation of, in plants (HOFFMEISTER), A., ii, 205.
- Celluloses**, nitro- (LUNGE and BEBIE), A., i, 508.  
comparison of, with nitromannitols (VIGNON and GERIN), A., i, 662.  
soluble, estimation of, in gun-cotton and smokeless powder (QUINAN), A., ii, 480.
- Cement**, Portland, action of sea water on (REBUFFAT), A., ii, 385.
- Cements**, hydraulic, constitution of (REBUFFAT), A., ii, 18.
- Cement testing** (KLEIN and PECKHAM), A., ii, 579.
- Cephalopods**, metabolism in (v. FÜRTH), A., ii, 115.
- Cerebrin**, galactose from (SCHULZ and DITTHORN), A., i, 554.
- Cerebron** and its bromo-derivative (WÖRNER and THIERFELDER), A., i, 176.
- Cerebro-spinal fluid**, oxydase in (CAVAZZANI), A., ii, 257.
- Cereic acid** (HEYL), A., i, 738.
- Cerite metals**, separation of, from monazite sand (MEYER and MARCKWALD), A., ii, 21.  
See also Earths, rare.
- Cerium**, thermochemistry of the hyperacids of (PISSARJEWSKY), A., ii, 56.  
double nitrates of quadrivalent (MEYER and JACOBY), A., ii, 510.  
nitrate, double salts, with ammonium nitrate (DROSSBACH), A., ii, 102.  
nitride (MATIGNON), A., ii, 61.  
oxide, preparation of pure (STERBA), A., ii, 602.  
crystallised (STERBA), A., ii, 602.
- Ceruleite** from Huanaco, Chili (DUFET), A., ii, 64.
- Cetipic acid** (*oxalldiacetic acid*), ethyl ester, condensation of, with *o*-diamines (THOMAS-MAMERT and STRIEBEL), A., i, 614.
- Ceylon oil**. See Cocoa butter
- Chalcopyrite** (MORGAN and SMITH), A., ii, 319.
- Chalybite** from Roumania (PONI), A., ii, 26.
- Charcoal**, wood, action of sulphuric acid on (VERNEUIL), A., i, 546.
- iso***Chavibetol** (POMERANZ), A., i, 700.
- Cheese**, estimation of nitrogen in (VIVIAN), A., ii, 363.
- Cheese**. See also Agricultural Chemistry.
- Chelerythrine** and its salts (FISCHER), A., i, 742, 743; (WINTGEN), A., i, 744.
- Chelidonine** and its salts (SCHMIDT), A., i, 742; (WINTGEN), A., i, 743.
- Chelidonium majus*, alkaloids of (SCHMIDT), A., i, 742; (WINTGEN), A., i, 743.
- Chemical calculation**, short methods of (RICHARDS), A., ii, 648.  
combination, theory of (MARTIN), P., 1901, 169.  
constitution, relation between reactive power and (WEGSCHEIDER), A., ii, 229.  
of triphenylmethane colouring matters in relation to the absorption spectra of their aqueous solutions (LEMOULT; CAMICHEL), A., i, 100.  
and absorption spectra of saline solutions, action of heat on (HARTLEY), A., ii, 53.  
of liquids in relation to temperature and viscosity (BATSCHINSKI), A., ii, 645.  
and composition in relation to density; oxygenated compounds (KANONNIKOFF), A., ii, 305.  
relation between, and colour of isomerides of rosindulines (KEHRMANN), A., i, 52.  
relationship between, physiological action, and chemical change in the organism (HILDEBRANDT), A., ii, 614.  
of methylbenzaconine and of pyraconitine in relation to their physiological action (CASH and DUNSTAN), A., ii, 612.  
relation between physiological action and, in the piperidine series (R. and E. WOLFFENSTEIN), A., ii, 566.  
energy of formic acid (CAZENEUVE), A., ii, 379.  
formulae, agreement between, and the theory of invariants (GORDAN and ALEXÉEFF), A., ii, 13; (STUDY), A., ii, 497.  
kinetics, form of the laws of, for homogeneous systems (WEGSCHEIDER), A., ii, 57.  
mechanics, experimental verification of a law of (PÉLABON), A., ii, 545, 656.  
transformations, polymolecular, between ferric salts, chromic acid or nitrous acid and metallic iodides (SCHÜKAREFF), A., ii, 647.
- Chemistry**, contributions to (CLARKE), A., ii, 63.

**Chemistry**, inorganic and organic, remarks on the relation between (MICHAELIS), A., i, 195.  
physical, the study of (WINKLER), A., ii, 232.

**Chicory root**, analysis of (WOLFF), A., ii, 295.

**Children**, influence of boric acid and borax on metabolism in (TUNNICLIFFE and ROSENHEIM; GRUNBAUM), A., ii, 517.

influence of formaldehyde on metabolism in (TUNNICLIFFE and ROSENHEIM), A., ii, 517.

See also Infants.

**Chloral**, action of alcohols on (GABUTTI), A., i, 367.

**Chloral hydrate**, molecular refraction of, in solution (RUDOLPHI), A., ii, 489.  
molecular weight of, at the boiling point (DE FORCRAND), A., i, 668.

**Chloralaminophenylguanidine** nitrate (PELLIZZARI and RONCAGLIOLI), A., i, 768.

**Chlorine**, evolution of, from the decomposition of chlorates (SODEAU), T., 247; P., 1900, 209.

preparation of, from sodium chlorate (GRAEBE), A., ii, 309.

solubility of, in aqueous hydrochloric acid (MELLOR), T., 225; P., 1900, 221.

reaction of, with ammonia (NOYES and LYON), A., ii, 601.

union of, with hydrogen (MELLOR), T., 216; P., 1900, 221.

origin of combined, in moorland waters (ACKROYD), T., 673; P., 1901, 87.

**Hydrochloric acid** (*hydrogen chloride*), electrolysis of (MELLOR), T., 216; P., 1900, 221.

heat of formation of (AKUNOFF), A., ii, 82.

influence of cane sugar on the conductivity of solutions of (MARTIN and MASSON), T., 707; P., 1901, 91.

depression of the freezing point in solutions containing sulphuric acid and (BARNES), A., ii, 304.

dry, apparatus for the evolution of (GWIGGNER), A., ii, 93.

preparation of solutions of, for analysis (MEADE), A., ii, 530.

reaction between ethyl alcohol and (PRICE), T., 303; P., 1900, 185.

supposed compound of, with ether (JUTTNER), A., ii, 595.

and methyl ether, mixtures of (KUENEN), A., ii, 146.

estimation of, in gastric juice (MEUNIER), A., ii, 342.

## Chlorine:—

**Chlorides**, decomposition of, by ignition with organic matter (DAVIES), A., ii, 277.

variation in the excretion of, during insufficient nutrition (JAVAL), A., ii, 565.

**Chlorates**, decomposition of (SODEAU), T., 247, 939; P., 1900, 209; 1901, 149.

detection of, by strychnine (FAGES), A., ii, 191.

iodometric estimation of, in electrolytic bleaching solutions and potassium chlorate lyes (DITZ), A., ii, 687.

**Hypochlorous acid**, action of, on metallic chlorides (v. TIESENHOLT), A., ii, 154; (FOERSTER), A., ii, 310.

action of, on olefines (KRASSUSKY), A., i, 246.

**Hypochlorites**, transformation of, into chlorates (FOERSTER), A., ii, 309.  
behaviour of, with carbohydrates (BRÄUTIGAM), A., i, 671.

**Perchloric acid**, action of bromine and iodine on (MICHAEL and CONN), A., ii, 152.

reactions of, with aspidospermine and the strychnine alkaloids (HAEUSSERMANN and SIGEL), A., ii, 124.

**Chlorine peroxide** and as a steriliser of drinking water (REYCHLER), A., ii, 548.

*heptoxide*, action of bromine and iodine on (MICHAEL and CONN), A., ii, 152.

**Chlorine compounds**, organic, in the urine (VILLE and MOITESSIER), A., ii, 565.

## Chlorine, estimation of:—

estimation of, in benzyl and benzylidene chlorides (MACKENZIE), T., 1220.

estimation of, in wines (KLEIBER), A., ii, 629.

**Chloro-acids**, fatty, formation of, from the corresponding amino-acids (JOCHM), A., i, 129.

**Chlorocarbonates**, preparation of (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 662, 663, 697.

of alcohols (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 662, 663, 697.

of phenols and their derivatives (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 697.

action of lead thiocyanate on (DORAN), T., 906; P., 1901, 130.

- Chloroform** of crystallisation (KASSNER), A., i, 283.  
 formation of, from lactic acid (EBERHARD), A., i, 357.  
 vapour tensions of mixtures of ether and (KOHNSTAMM and VAN DALFSEN), A., ii, 641.  
 action of chloroplatinic acid on (PRANDTL and HOFMANN), A., i, 13.  
 condensation of, with cyanoacetamide (ERRERA), A., i, 43.  
 reaction between potassium hydroxide and (SAUNDERS), A., ii, 13.  
 physiological action of (WRIGHT), A., ii, 180, 408.  
 action of, on the reducing power of blood (LAMBERT and GARNIER), A., ii, 257.  
 precipitability of proteids by (SALKOWSKI), A., i, 241; (KRÜGER), A., i, 621.
- Chloroform water**, physiological action of (ROSTOSKI), A., ii, 261.
- "Chloroformic dialysis"** (DASTRE), A., ii, 325.
- $\alpha$ -Chlorohydrin**, action of, on tertiary amines (BIENENTHAL), A., i, 128.
- Chloropal** from Moravia (V. JOHN), A., ii, 250.
- Chlorophosphines**, aromatic, and their derivatives (MICHAELIS), A., i, 300.
- Chlorophyll**. See Agricultural Chemistry.
- Chlorophyllin**, blue (TSVETT), A., i, 94.  
**Metachlorophyllins** and **Metachlorophyllin- $\beta$**  (TSVETT), A., i, 222.
- Chloroplatinic acid**. See under Platinum.
- Chocolate**, detection of dextrin and tragacanth in (WELMANS), A., ii, 288.  
 detection of sesamé oil in (POSSETTO), A., ii, 703.
- Chocolate-flour**, analysis of (BEYTHIEN and HEMPEL), A., ii, 288.
- Chondrus crispus***, carbohydrates of (SEBOR), A., i, 15.
- Chromatophores**, action of enzymes on (KONING), A., i, 177.
- Chrome alum**, viscosity of solutions of (FERRERO), A., ii, 494.
- Chrome-steel**, analysis of (HERTING), A., ii, 284.
- Chromite** (*chrome iron ore*) from Kraubat, Upper Styria (RYBA), A., ii, 110.  
 from North Carolina (PRATT), A., ii, 64.
- Chromium**, electrolytic deposition of (FÉRÉE), A., ii, 513.  
 electrical properties of (LUTHER), A., ii, 301; (ABEL), A., ii, 490; (BRAUER), A., ii, 635.
- Chromium**, electromotive force and optical constants of (MICHELI), A., ii, 82.
- Chromium alloy** with aluminium, effect of various compounds on the periodicity of (OSTWALD), A., ii, 24.
- Chromium boride** (TUCKER and MOODY), P., 1901, 129.
- Chromic chloride**, anhydrous, rate of solution of, in presence of reducing agents (DRUCKER), A., ii, 230.  
 hydrates of (WERNER and GUBSER), A., ii, 453; (PFEIFFER), A., ii, 659.
- Trichlorotriaquochromium**, existence of, and compound of, with pyridine hydrochloride (PFEIFFER), A., ii, 659.
- Chromium**, new oxide of, CrO (FÉRÉE), A., ii, 513.  
 oxide, estimation of, volumetrically, in chromium oxide mordants (HARTMANN), A., ii, 626.  
*sesquioxide*, new hydrate of, Cr<sub>2</sub>O<sub>3</sub>.H<sub>2</sub>O (FÉRÉE), A., ii, 513.  
 oxides and hydroxides (WYROUBOFF), A., i, 580.
- Chromic acid**, velocity of reaction and polymolecular transformations between, and metallic iodides (SCHÜKAREFF), A., ii, 647.  
 use of diphenylcarbazine for detecting, in cotton dyed with chrome yellow (CAZENEUVE), A., ii, 626.  
 estimation of (KEBLER), A., ii, 694.  
 estimation of, iodometrically (SEUBERT and HENKE), A., ii, 132.
- Chromium nitride** (FÉRÉE), A., ii, 514.
- Chromium**, estimation of:—  
 estimation of (NAMIAS), A., ii, 38.  
 estimation of, by potassium-iodide-iodate mixture (STOCK and MAS-SACU), A., ii, 284.  
 estimation of, in tungsten alloys (IBBOTSON and BREARLEY), A., ii, 198.
- Chromogen**, new, producing a carmine-red dye (MOLISCH), A., ii, 571.
- Chromone group**, syntheses in the (v. KOSTANECKI and RÓŻYCKI), A., i, 222; (v. KOSTANECKI and TAMBOR), A., i, 558.
- Chromyl dichloride**, use of, in destroying organic substances in toxicological analysis (PAGEL), A., ii, 39.
- Chrysazinsulphonic acid**, *p*-diamino- (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 760.
- Chrysoidine-2-carboxylic acid**, methyl ester and its hydrochloride (MEHNER), A., i, 472.
- Chrysoin** (SISLEY), A., i, 775.

- Chrysophyll** (SCHUNCK), A., i, 734.
- Ciders**, new indicator for estimating the acidity of (RUNYAN), A., ii, 629.
- Cigar smoke** (HABERMANN), A., ii, 680. See also Tobacco.
- Cincholeuponic acid**, conversion of, into an acid free from nitrogen (SKRAUP), A., i, 226.
- Cinchomeronamic acid** (KIRPAL), A., i, 227.
- Cinchomeric acid** (*pyridine-3:4-dicarboxylic acid*), methyl ester and chloride (MEYER), A., i, 750.
- Cinchona bark**, estimation of the amount of alkaloids in (VAN KETEL), A., ii, 362.
- Cinchonic acid** and its chloride and methyl ester (MEYER), A., i, 407.
- Cinchonidine dibromide** and its salts and dibromide hydrobromide perbromide (CHRISTENSEN), A., i, 482.  
alkyl and chloro-carbonates (VEREINIGTE CHININFABRIKEN ZIMMER & Co.), A., i, 739.
- Cinchonidine**,  $\alpha$ - and  $\beta$ -dibromo- (GALLIMARD), A., i, 162.
- Cinchonine** (JUNGFLEISCH and LÉGER), A., i, 338.  
transformation of, by sulphuric acid (SKRAUP), A., i, 404.  
conversion of the hydrogen haloid additive compounds of, into halogen-free bases (SKRAUP), A., i, 480.  
*dibromide* and its hydrobromide, and *dibromide hydrobromide perbromide* and its mercury salt (CHRISTENSEN), A., i, 482.
- $\delta$ -Cinchonine** and its hydriodides, and nitroso- and hydrochloro-derivatives (LANGER), A., i, 404.
- alloCinchonine* and its hydriodides, sulphate, and phenylcarbimide derivative (HLAVNÍČKA), A., i, 404.
- tautoCinchonine* (LANGER), A., i, 403.
- Cinchotoxine**, formula of, and its nitroso-derivatives and their salts (v. MILLER and ROHDE), A., i, 95.
- Cineolic acid** and its isomeride (RUPE and RONUS), A., i, 578.
- r-Cineolic acid*, resolution of, into its optically active components (RUPE and RONUS), A., i, 119.
- d-Cineolic anhydride* (RUPE and RONUS), A., i, 119.
- Cinnamaldehyde**, condensation of, with methyl nonyl ketone (CARETTE), A., i, 367.
- Cinnamic acid** ( *$\beta$ -phenylacrylic acid*), detection of, in benzoic acid (JORISSEN), A., ii, 207, 291.
- Cinnamic acid**, amyl and menthyl esters and their dibromo-derivatives (COHEN and WHITELEY), T., 1307; P., 1900, 213.  
ethyl ester, action of sodium on (MICHAEL), A., i, 125.  
methyl ester, action of diazomethane on (v. PECHMANN and BURKARD), A., i, 167.
- Cinnamic acid**,  $\alpha$ -cyano-, ethyl ester and its isomeride (BERTINI), A., i, 537.  
*o*- and *p*-nitro-, methyl esters (WAHL), A., i, 664.
- Cinnamic methylamide** and *dibromo-* (ORTON), T., 1355; P., 1901, 200.
- alloCinnamic acid*,  $\alpha$ -bromo-, condensation of (MANTHEY), A., i, 31.
- Cinnamylacodylic acid** (ASTRUC and MURCO), A., i, 144.
- Cinnamylidenobarbituric acid** (CONRAD and REINBACH), A., i, 410.
- Cinnamylideneindene** (THIELE), A., i, 76.
- Cinnamylidene-2-methylsemicarbazone** (YOUNG and OATES), T., 666; P., 1901, 86.
- Cinnamylidenephénylglucolohydrazide** (CURTIUS and MÜLLER), A., i, 779.
- Cinogenic acid** and its salts (RUPE and RONUS), A., i, 578.
- Citraconic acid** (*propylenedicarboxylic acid*), ethyl ester, action of ethylmalonate, methylmalonate and ethylmalonate on (MICHAEL), A., i, 123.  
esters, action of diazomethane on (v. PECHMANN and BURKARD), A., i, 168.
- Citral**, oxidation products of, in the organism, and some cyclic isomerides (HILDEBRANDT), A., ii, 181, 669.  
an isomeride of (CHEMISCHE FABRIK GRIESHEIM-ELEKTRON), A., i, 731.
- $\beta$ -cycloCitral* and its compound with semicarbazide (TIEMANN and SCHMIDT), A., i, 158.
- cycloCitral*s, isomeric, formation and constitution of (TIEMANN and SCHMIDT), A., i, 157.
- Citralaminophénylguanidine nitrate** and picrate (PELLIZZARI and RICKARDS), A., i, 770.
- cycloCitralsemicarbazone* (SCHMIDT), A., i, 599.
- Citraptene** (*lemon camphor*) (THEULIER), A., i, 218.
- Citric acid**, action of formaldehyde on (ALBERDA VAN EKENSTEIN), A., i, 120.  
and tartaric acid, best tests for (PARIS), A., ii, 206.  
detection of, in wine (SPICA), A., ii, 701.

- Citric acid**, salts, constitution of (SCHIAVON), A., i, 666.  
 iron and iron ammonium salts (MARTINOTTI), A., i, 667.  
 manganese salt (POWER), A., i, 667.
- Citron**, oil of (BURGESS), A., ii, 702.
- Citronellaldehyde**, constitution of (HARRIES and SCHAUWECKER), A., i, 730.
- Citrophen** (*citrotriphenetidine*), colour reaction of, with potassium permanganate (MAAS), A., ii, 210.
- Claisen reaction**, the (LAPWORTH), T., 1269; P., 1900, 109; 1901, 95.
- Clay**, estimation of, in soil (PAGNOUL), A., ii, 283.
- Clays**, proximate analysis of (JACKSON and RICH), A., ii, 198.
- Clover**. See Agricultural Chemistry.
- Cloves**, proximate analysis of (MCGILL), A., ii, 432.
- Coal**, estimation of arsenic in (SMITH and JENKS), A., ii, 476; (CHAPMAN), A., ii, 690.  
 estimation of sulphur in (PELLET), A., ii, 622.  
 See also Fuels.
- Coal tar**, presence of homologous cumarones in (STOERMER and BOES), A., i, 31.  
 brown-, destructive distillation of (ROSENTHAL), A., i, 581.
- Cobalt**, action of ammonia on, at high temperatures (BEILBY and HENDERSON), T., 1251; P., 1901, 190.
- Cobalt alloy** with aluminium (BRUNCK), A., ii, 656.
- Cobalt bases**, number of ions in (WERNER and HERTZ), A., ii, 638.  
 Luteocobaltic chlorosulphate and chloroselenate, crystalline form of (KLOBB), A., ii, 103.
- Cobalt salts**, action of alcohols on (DITZ), A., ii, 222.
- Cobalt arsenate**, octohydrated (DUCRU), A., ii, 23.  
 ammoniacal arsenates (DUCRU), A., ii, 23, 73, 243.  
 chloride, compound of, with cupric oxide (MAILHE), A., ii, 601.  
 iodate and its hydrates, solubility of (MEUSSER), A., ii, 555.  
 iodide, double salt with mercuric iodide (DOBROSERDOFF), A., ii, 510.  
 nitrate, temperature coefficient of susceptibility of solutions of (MOSLER), A., ii, 643.  
 nitride (BEILBY and HENDERSON), T., 1251; P., 1901, 190.  
 peroxide (BAYLEY), A., ii, 162.  
 oxides (HÜTTNER), A., ii, 389.
- Cobalt selenides** (FONZES-DIACON), A., ii, 22.  
 silicide, preparation and properties of (LEBEAU), A., ii, 242.  
 sulphide (HERZ), A., ii, 513.
- Cobalt organic compounds**:—
- Cobalt compounds** with diethylenediamine, stereoisomeric (WERNER), A., i, 510, 512; (WERNER and HUMPHREY), A., i, 511; (WERNER and GERB), A., i, 512; (WERNER and HERTZ), A., ii, 638.
- Cobalticyanic acid**, compounds of, with alcohols, aldehydes, ethers and ketones (v. BAEYER and VILLIGER), A., i, 659.
- Cobalt**, detection, estimation, and separation of:—  
 reactions of (DONATH), A., ii, 389.  
 detection of (DITZ), A., ii, 223.  
 Vogel's method for the detection of (TREADWELL and VOGT), A., ii, 284.  
 estimation of, as phosphate (DAKIN), A., ii, 131.  
 separation of, from copper (SÜDERBAUM), A., ii, 198.  
 separation of, from nickel (ROSENHEIM and HULDSCHINSKY), A., ii, 533.  
 separation of, electrolytically, from nickel (BALACHOWSKY), A., ii, 533.  
 separation of, from zinc (TREADWELL and KRAMERS), A., ii, 281.
- Coca**, assay of (LAMAR), A., ii, 631.
- Cocaine**, decomposition of, in the organism (WIECHOWSKI), A., ii, 615.  
 and its hydriodide/periodide, estimation of (GARSED and COLLIE), T., 675; P., 1901, 89.
- γ-Cocaine**, conversion of tropinone into (WILLSTÄTTER and BODE), A., i, 482.
- Coccellinic acid** from lichens (HESSE), A., i, 150.
- Coccolite** from Moravia (KOVÁŘ), A., ii, 606.
- Cocoa**, detection of dextrin and tragacanth in (WELMANS), A., ii, 288.  
 and cocoa mixtures, estimation of fat in (WELMANS), A., ii, 47.
- Cocoa butter** (*cocanut oil*, *Ceylon oil*), composition of (KLIMONT), A., i, 663.  
 detection of, in butter (RANWEZ), A., ii, 702.  
 detection of, in butter and margarine (INDEMANS), A., ii, 78.
- Cocconut**. See Agricultural Chemistry.
- Cochineal**, detection of, in wine (BELLIER), A., ii, 210.

- Cod**, ichthulin and ichthulic acid from (LEVENE), A., i, 433.
- isoCodeine** and its methiodide, preparation of, and the action of sodium hydroxide on the methiodide (SCHRYVER and LEES), T., 574; P., 1901, 55.
- Cerulein**, constitution of, and its pentaacetate, and methyl and ethyl ethers (ORNDORFF and BREWER), A., i, 724.
- Coffee** of Grande Comore, composition of the (BERTRAND), A., ii, 185.  
roasted, adulteration of, by adding water and borax (BERTARELLI), A., ii, 195.
- Coke**, estimation of arsenic in (SMITH and JENKS; ARCHBUTT and JACKSON), A., ii, 476; (CHAPMAN), A., ii, 690.
- Colchicine**, isolation and estimation of (PRESCOTT and GORDIN), A., ii, 5.  
physiological significance of, in different Colchicum and Merendera (ALBO), A., ii, 679.
- Colchicum**. See Agricultural Chemistry.
- Collidine**, compounds of, with metallic salts (TOMBECK), A., i, 164.
- Colloidal solutions**, theory of (DONNAN), A., ii, 439.  
properties of (POSTERNAK), A., ii, 231, 544, 648.  
size of the particles present in (DE BRUYN), A., ii, 90.
- Colloids**, invisible liquid layers and surface tension of (QUINCKE), A., ii, 646.
- Colostrum**. See under Milk.
- Colour**, relation between, and constitution of isomerides of rosinduline (KEHRMANN), A., i, 52.  
of iodine solutions (VAUBEL), A., ii, 446.  
of ions (VAILLANT), A., ii, 595.  
of minerals (v. KRAATZ-KOSCHLAU and WÖHLER), A., ii, 166; (WEIN-SCHENK), A., ii, 167.  
of smoky quartz (v. KRAATZ-KOSCHLAU and WÖHLER), A., ii, 166; (KOENIGSBERGER), A., ii, 167.  
of zircon (v. KRAATZ-KOSCHLAU and WÖHLER), A., ii, 166; (SPEZIA), A., ii, 167.
- Colour changes** of substituted anilines when mixed with various reagents (OECHSNER DE CONINCK), A., i, 80.
- Colour shade**, theory of (LIEBERMANN), A., ii, 268.
- Colouring matters**, new (GRIMAU and LEFÈVRE), A., i, 268.  
acridine, preparation of (BADISCHE ANILIN- and SODA-FABRIK), A., i, 753.  
of the *esculetin* series (LIEBERMANN and WIEDERMANN), A., i, 736.
- Colouring matters**, azo-. See under Azo.  
of beetroot, and its absorption spectrum (FORMÁNEK), A., ii, 35.  
from benzazoles (KYM), A., i, 47.  
of blood, absorption spectra of the (FORMÁNEK), A., ii, 711.  
yellow, accompanying chlorophyll and their spectroscopic relations (SCHUNCK), A., i, 734.  
from 3:3'-dichlorobenzidine and naphthionic acid (COHN), A., i, 166.  
from *m*-dialkylaminoalkoxybenzenes (GRIMAU), A., i, 269.  
from the condensation of *m*-diethylaminohydroxybenzoylbenzoic acid and its chloro-derivatives with the sulphonic acids of the hydroxynaphthalenes (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 734.  
violet, from the action of chromic acid on diphenylcarbazine (CAZENEUVE), A., i, 655.  
of the phenylanthracene series (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 729.  
phenyldiphenylenemethane, synthesis of a (HALLER and GUYOT), A., i, 569.  
from the balsam of *Picea vulgaris* (TSCHIRCH and BRUNING), A., i, 92.  
from the resin-balsam of *Pinus Pinaster* (TSCHIRCH and BRUNING), A., i, 221.  
carmine-red from *Schenkia blumenaviana* (MOLISCH), A., ii, 571.  
sulphonated hydroxyazo-, and their salts (SISLEY), A., i, 775.  
production of, from sodium tetrazoditolylsulphonate and  $\beta$ -naphthylethylamine (SEYEWITZ and BLANC), A., i, 621.  
yellow, from thiocyanates (PAWLEWSKI), A., i, 71; (GOLDBERG), A., i, 193, 516, 677.  
blue, green, and red, from triphenylmethane (GRIMAU), A., i, 269.  
from triphenylmethane, absorption spectra of (CAMICHEL and BAYRAC), A., i, 296.  
of the triphenylmethane series, relation between their constitution and the absorption spectra of their aqueous solutions (LEMOULT; CAMICHEL), A., i, 100.  
red, in urine after administration of pyramidone (JAFFÉ), A., ii, 672.  
 $C_{15}H_{10}O_6$ , from the decomposition of robinin, and its sulphate and tetraacetyl derivative (PERKIN), P., 1901, 87; (SCHMIDT), A., i, 602.

**Colouring matters**,  $C_{15}H_{10}O_6$ , of the flowers of *Delphinium Consolida*, and its hydriodide, sulphate, and tetracetyl derivative (PERKIN and WILKINSON), P., 1900, 182.

chemical theory of the behaviour of (SISLEY), A., i, 99.

new method of characterising (CAMICHEL and BAYRAC), A., ii, 297.

dissolved, action of enzymes on (KONING), A., i, 177.

for fats (MICHAELIS), A., i, 489.

foreign, detection of, in spirits (CRAMPTON and SIMONS), A., ii, 134.

**Colouring Matters.** See also :—

Anthophaein.

-Apigenin.

Apiin.

Beetroot-red.

Bilifuscin.

Bilirubin.

Brazilein.

Brazilin.

Campheride.

Campherol.

Chlorophyll.

Chlorophyllin.

Chrysophyll.

Cochineal.

Gallotannin.

Hæmatin.

Hæmin.

Hæmatoxylin.

Hæmoglobin.

Indigo.

Lotoflavin.

Luteolin.

Mesoporphyrin.

Metachlorophyllins.

Methæmoglobin.

Orchil.

"Orchil red."

Oroxylin.

Osyritrin.

Oxyhæmoglobin.

Phyllocyanin.

Phytolacca.

Quercitrin.

Rhamnazin.

Rhamnetin.

Robinin.

Rutin.

Tecomin.

Trimethylbrazilin.

Violaquercitrin.

*Colpoen compressum* (*Osyris compressa*), constituents of (PERKIN), P., 1901, 88.

**Combustion**, apparatus for the auto-regulation of (GANIKE), A., ii, 195.

in furnaces, phenomena of (BOUDOUARD), A., ii, 651.

of gases (TANATAR), A., ii, 13, 228.

**Combustion** of nitrogen (SALVADORI), A., ii, 95.

**Compressibility** of solutions (GUINCHANT), A., ii, 227.

**Conchite**, a new form of calcium carbonate (KELLY), A., ii, 168.

relation of, to aragonite (KELLY), A., ii, 168; (BRAUNS), A., ii, 395.

**Conductivity**, electrical. See Electrochemistry.

heat. See Thermochemistry.

**Conhydrine**, oxidation of (WILLSTÄTTER), A., i, 739.

**Conifer seeds.** See Agricultural Chemistry.

**Contact action**, theory of (EULER), A., ii, 495.

**Coolgardite** from Coolgardie, Western Australia (CARNOT), A., ii, 515; (RICKARD), A., ii, 663.

See also Tellurides.

**Cooling mixture**, preparation of (RUFF), A., ii, 17.

**Copal**, Kauri, from New Zealand (TSCHIRCH and NIEDERSTADT), A., i, 398.

**Copals**, acid and saponification numbers of some (LIPPERT and REISSIGER), A., ii, 50.

See also Resins.

**Copellidine** and *iso*Copellidine and their benzoyl, phenylcarbimide, and benzene-sulphonic derivatives (MARCUSE and WOLFFENSTEIN), A., i, 608.

**Copper**, presence and amount of, in plants (HECKEL), A., ii, 331.

electrolytic deposition of (DICKSON), A., ii, 159.

rate of electrolytic deposition of, in presence of sulphuric acid (SIEGRIST), A., ii, 370.

melting point of (HOLBORN and DAY), A., ii, 85.

equilibrium between the different stages of oxidation of (ABEL), A., ii, 377.

action of ammonia on, at high temperatures (BEILBY and HENDERSON), T., 1252; P., 1901, 190.

action of, on *Aspergillus niger* (RICHTER), A., ii, 567.

**Copper alloys**, slow alteration in, in contact with air and alkali chlorides (BERTHELOT), A., ii, 386.

with aluminium (BRUNCK), A., ii, 656.

with gold and silver, certain properties of (ROBERTS-AUSTEN and ROSE), A., ii, 25.

with tin, results of chilling (HEYCOCK and NEVILLE), A., ii, 508.

with tin and with zinc, density of (MAEY), A., ii, 655.



**Copper alloys** with zinc, thermochemistry of (BAKER), A., ii, 303.

**Copper-ammonia sulphate**, influence of temperature on the dissociation of (DAWSON and McCRAE), T., 1072; P., 1901, 178.

thiocyanate and its compound with ammonia (LITTELSCHIED), A., i, 635.

**Copper antimonates** (DELACROIX), A., ii, 316.

arsenides (KOENIG), A., ii, 108.

See also Algodonite, Domeykite, Mohawkite, and Stibio-domeykite. potassium and sodium carbonates (GROGER), A., ii, 240.

nitride (BEILBY and HENDERSON), T., 1253; P., 1901, 190.

oxide, commercial (DRAWE), A., ii, 508.

selenides (FONZES-DIACON), A., ii, 100.

sulphate, crystallisation of (HOPKINS), A., ii, 452.

chemical dissociation of, under the influence of water and temperature (HENSSEN), A., ii, 540.

solubility of mixtures of sodium sulphate and (MASSOL and MALDES), A., ii, 594.

mixtures of aqueous solutions of sulphuric acid and, composition of (LINDSAY), A., ii, 386.

effect of, on germination (DEHERAIN and DEMOUSSY), A., ii, 266; (COUPIN), A., ii, 335; (DEMOUSSY), A., ii, 570.

polysulphides (ROSSING), A., ii, 100.

**Cupric salts**, compounds of, with organic bases (TOMBECK), A., i, 266.

fluoride, behaviour of, in solution (JAEGER), A., ii, 386.

hydroxide, solubility of, in salicylic acid (WOLFF), A., ii, 198.

action of, on solutions of metallic salts (MAILHE), A., ii, 601.

action of, on metallic sulphates (RECOURA), A., ii, 508; (SABATIER; ANDRÉ), A., ii, 509.

oxide, combined action of alkali salts and carbon dioxide on (KUHNING), A., ii, 656.

**Cuprous salts**, action of, on hydrocarbons and on carbon monoxide (BERTHELOT), A., i, 493.

chloride, dissolved in potassium chloride, action of acetylene on (CHAVASTELON), A., i, 494.

iodide, specific gravity of (SPRING), A., ii, 451.

oxide, conversion of, into cupric oxide, without the use of asbestos filters (SOLISSEN), A., ii, 286.

**Copper organic compounds** :—

and silver cyanides, estimation and separation of (BRUNCK), A., ii, 478. thiocyanate in analysis (VAN NAME), A., ii, 130.

**Copper, estimation and separation of** :— analysis of commercial (TRUCHOT), A., ii, 197; (HOLLARD), A., ii, 478.

estimation of, by organic bases (HERZ), A., ii, 478.

estimation of, volumetrically, as oxalate, and separation of, from arsenic, cadmium, tin, and zinc (PETERS), A., ii, 40.

estimation of, in pyrites (HEIDENREICH), A., ii, 197.

commercial, estimation of oxygen in (LUCAS), A., ii, 124.

separation of, from cobalt, from nickel, and from zinc (SODERBAUM), A., ii, 197.

electrolytic separation of mercury from (SPARE and SMITH), A., ii, 692.

**Copper bars**, sources of loss in the estimation of gold and silver in, and a method for its avoidance (VAN LIEW), A., ii, 41.

**Copper materials**, assay of, for gold and silver (GODSHALL), A., ii, 42.

**Copper and silver nuggets**, crystalline structure of (LIVERSIDGE), A., ii, 662.

**Cordierite** from Celebes and Germany (BUCKING), A., ii, 64.

**Coriamyrtin** and tutin, comparison of the properties of (EASTERFIELD and ASTON), T., 125; P., 1900, 212.

*Coriaria angustissima*, *C. ruscifolia*, and *C. thymifolia* ("tutu"), constituents of (EASTERFIELD and ASTON), T., 120; P., 1900, 211.

**Corn oil**. See Maize oil.

**Corundum**, abrasive power of (EMERSON), A., ii, 61.

**Corybulbine** and the inactive variety (GADAMER and BRUNS), A., i, 288.

its formula, conversion of, into corydaline; its hydriodide and acetyl derivative (DOBBIE, LAUDER, and PALIATSEAS), T., 87; P., 1900, 205.

**Corydaline**, preparation of, from corybulbine, its formula, and ethyl sulphate, hydriodide and platinichloride (DOBBIE, LAUDER, and PALIATSEAS), T., 87; P., 1900, 205.

**Cotarnine**, formula of (HANTZSCH), A., i, 162.

**Cotton seed oil**, Halphen's reaction for (WRAMPMEYER), A., ii, 207; (SOLTSIEN), A., ii, 292, 430.

**Coumalic acid**, conversion of, into furan-2:4-dicarboxylic acid (FEIST), A., i, 557.

- iso*Coumalic acid and its amide (v. PECHMANN and HAUSER), A., i, 480.
- Coumalin-6-carboxylic acid** and its ethyl ester (LAPWORTH), T., 1280; P., 1901, 96.
- Coumaranone** (*ketcoumaran*), synthesis of, and its oxime and semicarbazone (STOERMER and BARTSCH), A., i, 94.
- p*-**Coumaric acid**, methyl ester (MEYER), A., i, 629.
- Coumarilic acid** and its derivatives (STOERMER and CALOV), A., i, 336.
- Coumarin-4-carboxylic acid** and its ethyl ester (v. PECHMANN and v. KRAFFT), A., i, 286.
- Coumarins** from phenol (v. PECHMANN and v. KRAFFT), A., i, 285.  
from 1:2:4-trihydroxybenzene (v. PECHMANN and v. KRAFFT), A., i, 286.
- Coumarone derivatives**, nomenclature of (STOERMER), A., i, 400.  
bromo-derivatives (SIMONIS), A., i, 335; (STOERMER and CALOV), A., i, 336.
- Coumarone-resins** (KRAEMER and SPILKER), A., i, 557.
- Coumarones**, homologous, presence of, in coal tar (STOERMER and BOES), A., i, 31.
- Cows**. See Agricultural Chemistry.
- Cream**, estimation of fat in (ECKLES), A., ii, 137; (DEHLHOLM), A., ii, 359.
- Cream of tartar**. See Tartaric acid, potassium hydrogen salt.
- Creatine**, conversion of, into creatinine by a soluble dehydrating ferment in the organism (GÉRARD), A., ii, 178.
- Creatinine**, reducing power of (GREGOR), A., ii, 67.  
metabolism of (MACLEOD), A., ii, 115.  
test for (CIPOLLINA), A., ii, 698.
- Cresol**, estimation of (RUSSIG and FORTMANN; DITZ), A., ii, 289.
- o*-**Cresol**, tetrabromo- (BODROUX), A., i, 697.
- m*-**Cresol**, estimation of, in cresol mixtures (DITZ), A., ii, 44.
- p*-**Cresol**, halogen derivatives, action of nitric acid on (ZINCKE), A., i, 330.  
*tri*- and *tetra*-bromo-, and their  $\psi$ -quinols and acetyl derivatives (ZINCKE), A., i, 205.  
3-iodo- (DIMROTH), A., i, 440.
- Cresols**, dinitroamino- (ZINCKE and DROST), A., i, 73.
- o*-**Cresolaldehyde**. See 2-Hydroxy-m-tolualdehyde.
- Cresoxy**-. See Tolyloxy-.
- m*-**Cresylglucoside**, preparation of (RYAN and MILLS), T., 705; P., 1901, 90.
- Critical constants** of argon, krypton, and xenon (RAMSAY and TRAVERS), A., ii, 238.  
point of partially miscible liquids, remarkable phenomena near the (FRIEDLÄNDER), A., ii, 643.  
state, the (KANONNIKOFF), A., ii, 438.
- Crocidolite** ("blue asbestos") from Griqualand West (OLDS), A., ii, 113.
- Croconic acid**, energy of (COFFETTI), A., i, 29.
- Crops**. See Agricultural Chemistry.
- Crotonaldehyde**, condensation of, with isobutaldehyde (PLATTENSTEINER), A., i, 254.  
action of phenylhydrazine on (TRENER), A., i, 232.
- Crotonic acid**, ethyl ester, condensation of, with ethyl oxalate, and action of amyl formate and nitrite on (LAPWORTH), T., 1272; P., 1900, 109, 132.  
action of sodium and of ethyl malonate and methylmalonate on (MICHAEL), A., i, 124.
- Crotonic acid**, amino-, ethyl ester, action of phosphoryl chloride on (MICHAELIS and v. AREND), A., i, 609.  
 $\beta$ -amino-, ethyl ester, and its isomeride (BEHREND, MEYER, and BUCHHOLZ), A., i, 136.  
nitro-, ethyl ester (WAHL), A., i, 663.
- Crotonic acids**, stereoisomerism of (v. PECHMANN and BURKARD), A., i, 167.
- Crotonylanilide**, and the iso-compound, and  $\beta$ -chloro- and their phenylhydrazides (AUTENRIETH and SPIESS), A., i, 199.
- Crotonyl-benzylanilide** and -diphenylamide (BISCHOFF), A., i, 527.
- Crotonylene**. See Butinene.
- Crotonylethylanilide** (BISCHOFF), A., i, 527.
- Crotonylthiocarbimide** from colza seeds (SJOLLEMA), A., i, 583.
- Cryoscopic researches** (CHRUSTSCHOFF), A., ii, 86, 373.  
with methylene iodide (GARELLI and BASSANI), A., ii, 541.
- Cryoscopy**, phosphoryl chloride as a solvent in (ODDO), A., ii, 492.  
of the bromides of antimony and arsenic (GARELLI and BASSANI), A., ii, 373.  
of the human sweat (ARDIN-DELTEIL), A., ii, 67.  
See also Freezing point.
- Crystalline liquids**, so-called (TAMMANN), A., ii, 231.
- Crystallisation** of difficultly crystallisable substances (RÜMLER), A., ii, 90.

**Crystallisation** of copper sulphate (HOPKINS), A., ii, 452.  
of complex salt solutions (VAN'T HOFF), A., ii, 558.

**Crystallography** of double oxalates (WYROUBOFF), A., i, 7.  
of double selenates,  $R_2M(SeO_4)_2 \cdot 6H_2O$ , M being magnesium (TUTTON), A., ii, 546.

**Crystal-Ponceau** (*Ponceau-6R*) (SISLEY), A., i, 775.

**Crystals**, method of obtaining, in a solution without formation of superficial crust (WRÓBLEWSKI), A., ii, 90.

study of growing, by instantaneous photomicrography (RICHARDS and ARCHIBALD), A., ii, 546.

mixed, vapour pressure of (HOLLMANN), A., ii, 436.

equilibrium of, with the vapour phase (ROOZEBOOM), A., ii, 151.

of mercuric iodide and silver iodide, formation of two kinds of (ROOZEBOOM), A., ii, 20.

of thallium iodide and nitrate, formation of (VAN EIJK), A., ii, 19.

**Cumarophenazine** (MARCHLEWSKI and SOSNOWSKI), A., i, 415.

**Cumene** (*isopropylbenzene*), oxidation of (BOEDTKER), A., i, 684.

$\psi$ -**Cumidine**, acetylation of (SUDBOROUGH), T., 538; P., 1901, 45.

action of ethylene dibromide on (SENIER and GOODWIN), T., 254; P., 1900, 228.

**Cuminaldehyde**, action of, on  $\alpha$ -picoline (BACKE), A., i, 562.

*p*-**Cumyl chloromethyl ketone** (KUNCKELL and KORITZKY), A., i, 75.

**Cumyl** and  $\psi$ -**Cumyl methyl ketones**, selenium derivatives of (KUNCKELL and ZIMMERMANN), A., i, 215.

$\psi$ -**Cumyl-borobromide** and -boroxide (MICHAELIS and RICHTER), A., i, 356.

**Cupric** and **Cuprous**. See under Copper.

**Currents**. See Electrochemistry.

**Cuspidatic acid** from lichens (HESSE), A., i, 149.

**Cyanogen**, spectrum of (BALY and SYERS), A., ii, 633.

**Cyanogen bromide**, action of, on dimethylaniline (SCHOLL and NÖRR), A., i, 376.

**Hydrocyanic acid** (*hydrogen cyanide*) in plants (SOAVE), A., ii, 332.

action of, on plants (JOHNSON), A., ii, 334.

poisoning, antidote for (HERTING), A., ii, 535.

**Cyanogen** :—

**Cyanides**, the *isopurpuric acid* reaction for (REICHARD), A., ii, 581.

*iso***Cyanides**, aliphatic, preparation of (KAUFLER and POMERANZ), A., ii, 634.

**Cyanic acid**, potassium salt, absorption spectra of (HARTLEY, DOBBIE, and LAUDER), T., 855; P. 1901, 125.

estimation of (MELLOR), A., ii, 202; (HERTING), A., ii, 534; (VICTOR), A., ii, 623.

**Cyanogen**, estimation of :—

estimation of, in cyanides (MELLOR), A., ii, 202; (HERTING), A., ii, 534; (VICTOR), A., ii, 623.

estimation of, in gases (NAUSS), A., ii, 43.

**Cyanophyceæ** (BEYERINCK), A., ii, 523.

**Cyanuric acid** and chloride and methyl ester, absorption spectra of (HARTLEY, DOBBIE, and LAUDER), T., 849; P., 1901, 125.

**Cyanurtriamide**. See Melamine.

**Cyclic motion**, theory of, and the equation of condition (VAN DER WAALS), A., ii, 644.

**Cymene**, iodo- (EDINGER and GOLDBERG), A., i, 23.

*p*-**Cymene**, 2-bromo- and 2-chloro-, from 1:1-bromonitro- and 1:1-chloronitrocamphane (FORSTER and ROBERTSON), T., 1003; P., 1901, 169.

**Cymyl chloromethyl ketone** (KUNCKELL and KORITZKY), A., i, 75.

**Cystin** and **Cystein**, isolation of, in the decomposition of proteids (EMBDEN), A., i, 491.

**Cystin**, detection of, in waters (MOLINIÉ), A., ii, 42; (CAUSSE), A., ii, 133.

**Cystinuria**, the urine in (ROBERT), A., ii, 68.

**Cytisine**, and amino-, nitro-, and nitro-nitroso-, and the acetyl derivatives of the amino- and nitro-derivatives (FREUND and FRIEDMANN), A., i, 288.

**Cytisinephenylthiocarbamide**, nitro- (FREUND and FRIEDMANN), A., i, 288.

## D.

**Damascenine**, isomeride of (POMMERHNE), A., i, 239.

*Datura Stramonium* grown in Egypt, amount of hyoscamine in (DUNSTAN and BROWN), T., 71; P., 1900, 207.

**Day and hour of meeting**, discussion on the, P., 1901, 20, 54, 117.

**Decanaphthene**, chloro- (MABERY and SIEPLEIN), A., i, 306.

- n-Decanedicarboxylic acid** and its salts (WALKER and LUMSDEN), T., 1197; P., 1901, 188.  
electrosynthesis of (KOMPPA), A., i, 365.
- Decinoic acid.** See  $\beta\zeta$ -Dimethyl- $\beta$ -octadiene- $\theta$ -carboxylic acid.
- Decomposition voltages**, laboratory apparatus for (BANCROFT), A., ii, 302.
- Decyl alcohol** (*diethylamylcarbinol*) (MASSON), A., i, 250.
- Dehydroescorkein** (LIEBERMANN and WIEDERMANN), A., i, 736.
- Dehydromucic acid** and its derivatives (HILL; PHELPS and HALE), A., i, 555; (HILL and WHEELER), A., i, 556.
- Dehydrothymol**, *pentabromo*-, and its acetyl derivative and nitrate (v. BAeyer and SEUFFERT), A., i, 217.
- Delphinium Consolida**, colouring matter of the flowers of (PERKIN and WILKINSON), P., 1900, 182.
- Denitrification.** See Agricultural Chemistry.
- Density** in relation to composition and chemical oxygen: oxygenated compounds (KANONNIKOFF), A., ii, 305.  
maximum, molecular depression of the temperature of, of aqueous solutions of haloids of the alkali metals (DE COPPET), A., ii, 493.  
of solutions of alcohol, ether, and water (BUSNIKOFF), A., i, 306.  
of alloys (VAN AUBEL), A., ii, 453.  
of copper with tin and zinc and of zinc with tin (MAEY), A., ii, 655.  
of carbon dioxide in the solid and liquid state (BEHN), A., ii, 95.  
of cuprous iodide (SPRING), A., ii, 451.  
of ozone (LADENBURG), A., ii, 499.  
of precipitates, method of determining the (THATCHER), A., ii, 685.  
of aqueous sucrose solutions (DOMKE, HARTING, and PLATO), A., i, 189.  
of tetramethylenecarbinol (PERKIN), T., 330; P., 1901, 33.  
of uranium nitrate (OECHSNER DE CONINCK), A., ii, 164.  
of uranium sulphate (OECHSNER DE CONINCK), A., ii, 660.  
See also Vapour density.
- Deoxyalizarin**, bromo-, and its methoxy derivative, and condensation with phenols (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 729.
- Deoxyanthrapurpurin**, bromo-, and its condensation with phenols (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 729.
- Deoxybenzoin**, action of dry silver oxide and ethyl iodide on (LANDER), P., 1901, 59.
- Deoxyflavopurpurin**, bromo- (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 729.
- Deoxyguanine** and **Deoxyxanthine** and their salts (TAFEL and ACH), A., i, 425.
- Deoxyheteroxanthine** and its salts (TAFEL and WEINSCHENK), A., i, 107.
- Dephlegmator**, Hempel's, distillation with (HIRSCHEL), A., ii, 87.
- Depolarisation.** See Electrochemistry.
- Desylene-methyl and -ethyl ethyl ketones** and their isomerides (JAPP and MELDRUM), T., 1031; P., 1901, 174.
- Detonating materials**, new (ALVISI), A., ii, 498.
- Deuteroalbumose.** See Albumose.
- Dextrin**, detection of, in cocoa and chocolate, and estimation of, by polarisation (WELMANS), A., ii, 288.  
estimation of, in commercial glucose (LINDET), A., ii, 134; (MEUNIER), A., ii, 286.
- Dextrose** (*d-glucose*, *grape sugar*), and its glucosazone from cellulose (FENTON), P., 1901, 166.  
in normal hen's blood (SAITO and KATSUYAMA), A., ii, 404.  
constitution of (SIMON), A., i, 256.  
birotation of (OSAKA), A., i, 127.  
action of Bacteria on (HARDEN), T., 610; P., 1901, 57; A., ii, 567.  
action of yeast maltase on (EMMERLING), A., i, 258; (HILL), A., i, 452.  
digestibility of (DUCLERT and SÉNÉQUIER), A., ii, 458.  
derivatives of (KOEKS and KNORR), A., i, 369; (COLLEY), A., i, 671.  
isomeric acetyl halogen derivatives of (FISCHER and ARMSTRONG), A., i, 257, 671.  
influence of foreign substances on Trommer's test for (CIPOLLINA), A., ii, 698.  
estimation of in commercial glucose (LINDET), A., ii, 134; (MEUNIER), A., ii, 286.
- Dextrosephenylhydrazones** and their multirotation (SIMON and BÉNARD), A., i, 257.
- Dextrose-phenylureide** and -ureide (SCHOORL), A., i, 258.
- Diabetic coma**, pathology of (GRUBE), A., ii, 68.
- Diacetamide**, preparation of (TITHERLEY), T., 396, 411; P., 1901, 29, 31.
- Diaceticanthranilic acid.** See Anilid-acetic-*o*-carboxylic acid.
- Diacetoneaminoxime** (HARRIES), A., i, 194.  
and its dibenzoyl derivative (KOHN), A., i, 367.

- Diacetoxy-ethoxy- and -butoxy-pent-anthrenes**, chloro- (BERTHEIM), A., i, 468.
- Diacetoxymethoxypentanthrene**, bromo- (LIEBERMANN and LANSER), A., i, 466.
- Diacetoxypentanthrene**, chloro-, and its ether (BERTHEIM), A., i, 468.
- $\beta$ -2:4-Diacetoxyphenylmaleic anhydride** (v. PECHMANN and GRAEGER), A., i, 287.
- Diaceturia**, the urine in (KOBERT), A., ii, 68.
- Diacetyl-**. See also under the Parent Substance.
- Diacetylacetic acid**, ethyl ester, nitration of (BOUVEAULT and BONGERT), A., i, 501.
- Diacetyldiaminodi-bromo- and -chloro-benzene** (CHATTAWAY and ORTON), A., i, 228.
- Diacetyl-o-aminophenol**, nitration of (MELDOLA and WECHSLER), P., 1900, 180.
- 1:3-Diacetyldibromodiaminobenzene**, and 4:6-dibromo- (CHATTAWAY and ORTON), A., i, 228.
- o-Diacetyldi-bromo- and -chloro-diaminobenzene** (CHATTAWAY and ORTON), A., i, 228.
- Diacetylbromo-1:3-phenylenediamine**, 4:6-dibromo-, and **Diacetylbromo-p-phenylenediamine** (CHATTAWAY and ORTON), A., i, 228.
- m-Diacetyldichlorodiaminobenzene** and 4:6-dibromo- and 4:6-dichloro- (CHATTAWAY and ORTON), A., i, 228.
- p-Diacetyldichlorodiaminobenzene**, and 3:6-dichloro- (CHATTAWAY and ORTON), A., i, 228.
- Diacetyl-4-dimethylaminophenylazomethine** (SACHS and BARSCHALL), A., i, 670.
- Diacetyldiphenyldihydrazone** (FAVREL), A., i, 167.
- Diacetylmethylaziminotoluene**. See 4-Acetylmethylamino-1-acetyl-7-methylbenzotriazole.
- Diacetylphenylenediamines**, bromo-amino- and chloro-amino-derivatives of (CHATTAWAY and ORTON), A., i, 227.
- $\beta\beta$ -Diacetylpropionic acid**, ethyl ester, action of semicarbazide and of hydroxylamine hydrochlorides on (MARCH), A., i, 312.
- Diacetyltartaric anhydride**, action of pyridine on (WOHL and OESTERLIN), A., i, 365.
- Dialkyl carbonates**, preparation of (FARBENFABRIKEN FORM. F. BAYER & Co.), A., i, 663.
- m-Dialkylaminoalkyloxybenzenes**, colouring matters from (GRIMAU), A., i, 269.
- Dialkylaminoanthraquinones**, preparation and properties of (HALLER and GUYOT), A., i, 279.
- Dialkylamino-o-benzoyl- and -benzyl-benzoic acids** and their derivatives (HALLER and GUYOT), A., i, 276, 279.
- $\beta\beta$ -Dialkylglutaric acids**, preparation of (GUARESCHI), A., i, 630.
- Di-p-allyloxyphenylcarbamide** (SPIEGEL and SABBATH), A., i, 534.
- isoDialuric acid**, condensation of, with thiocarbamide (v. VOGEL), A., i, 262.
- transformation of, into dialuric acid (KOECH), A., i, 262.
- Dialysis** in certain liquids in which indiarubber, but not parchment, swells (WRÓBLEWSKI), A., ii, 307.
- use of reed tubes for (PHILIPPSON), A., ii, 646.
- Diamines**, action of aldehyde and of carbonyl chloride on (SCHOLTZ and JAROSS), A., i, 485.
- aliphatic, regularities in the melting points of (KAUFLER), A., i, 259.
- aromatic, action of urethane on (MANUELLI and RECCHI), A., i, 49.
- normal primary, alternation in boiling points in the series of (HENRY), A., i, 128.
- o-Diamines**, condensation of, with ethyl cetipate (THOMAS-MAMERT and STRIEBEL), A., i, 614.
- m-Diamines**, aromatic, thiosulphonic acids of (CLAYTON ANILINE Co.), A., i, 694.
- Diisoamyl sulphate** (NEF), A., i, 627.
- Diisoamylcarbinol** (*undecyl alcohol*) (GRIGNARD), A., i, 250, 680.
- Diisoamylformal**, heat of combustion and of formation of (DELÉPINE), A., ii, 6.
- Diamyloxydiphenylmethane**, attempt to prepare (MACKENZIE), T., 1208.
- Di-p-amyloxyphenylcarbamide** (SPIEGEL and SABBATH), A., i, 534.
- $\beta$ -Diamylsulphonebutyric acid**, ethyl ester, and its  $\alpha$ -mono- and di-methyl and -ethyl derivatives (POSNER), A., i, 704.
- $\gamma$ -Diamylsulphonevaleric acid** and its barium salt and ethyl ester (POSNER and DEINHARDT), A., i, 704.
- 2:6-Dianilino-4:5-dimethylpyrimidine** (SCHLENKER), A., i, 764.
- 3:10-Dianilindiphenylfluorindine** and its hydrochloride (KEHRMANN and GUGGENHEIM), A., i, 422.

- Dianisylidisazo- $\alpha$ -naphthol**, and the action of "Miehler's hydrol" on (MÖHLAU and KEGEL), A., i, 57.
- Diastase** and rennin in pancreatic extracts (VERNON), A., ii, 710.
- exosmosis of, by young seedlings (LAURENT), A., ii, 69.
- commercial preparations of (BARTH), A., i, 437.
- and yeast, combined action of, on starch granules (MORRIS), T., 1085; P., 1901, 178.
- of the Amoeba (MOUTON), A., i, 623.
- Diastases**, mechanism of the actions of (HANNIOT), A., ii, 175.
- Diazoacetic acid**, ethyl ester and potassium salt (HANTZSCH and LEHMANN), A., i, 678.
- new condensation of (BUCHNER and VAN DER HEIDE), A., i, 232.
- iso***Diazoacetic acid**, ethyl ester, and its potassium and sodium salts (HANTZSCH and LEHMANN), A., i, 678.
- Diazoaminobenzene-2-carboxylic acid**, *o*-, *m*-, and *p*-nitro- (MEHNER), A., i, 472.
- Diazoaminobenzene-2:2'-dicarboxylic acid**, methyl ester (MEHNER), A., i, 472.
- o*-**Diazoaminobenzoic acid** and its methyl ester, salts, and *m*- and *p*-nitro- (MEHNER), A., i, 471.
- ethyl ester (MEHNER), A., i, 645.
- Diazobenzene**, action of, on aliphatic aldehydes and ketones (BAMBERGER and MÜLLER), A., i, 778.
- action of, on phenol (BAMBERGER), A., i, 107.
- Diazobenzenephloroglucinol** methyl ether (PERKIN and ALLISON), P., 1900, 181.
- Diazobenzenesulphonic acid**, explosiveness of (WICHELHAUS), A., i, 241.
- action of hypochlorous acid on (ZINCKE), A., i, 778.
- 3-Diazocarbazole**, sensitiveness of, to light (RUFF and STEIN), A., i, 619.
- Diazo-chlorides**, action of methyl- and ethyl-acetylacetone on (FAVREL), A., i, 167.
- Diazo-compound**,  $C_6H_5O_3N_2ClS$ , and its isomeride, from *p*-chloroanilinesulphonic acids (PAAL), A., i, 693.
- Diazo-compounds**, sensitiveness of (RUFF and STEIN), A., i, 619; (GREEN, CROSS, and BEVAN), A., ii, 634.
- compounds of, with ethyl acetone-dicarboxylate, and their decomposition products (BÜLOW and HÖPFNER), A., i, 239.
- arylthiolsulphonates and arylsulphinates of (TRÖGER and EWERS), A., i, 171.
- 2-Diazofluorene salts** and **2-Diazofluorenone** chloride (DIELS), A., i, 522.
- Diazoguanidine**. See Carbaminoimino-azoinide.
- Diazomethane**, action of, on esters of crotonic, olefinemonocarboxylic, citraconic and mesaconic acids (v. PECHMANN and BURKARD), A., i, 167, 168.
- iso***Diazomethane**, derivatives of (HANTZSCH and LEHMANN), A., i, 678.
- Diazonium** (*benzenediazonium*) chlorides, action of ethereal alkylcyanoacetates on (FAVREL), A., i, 363.
- action of alkylmalonic acids on (FAVREL), A., i, 621.
- action of, on apiosedextrosephloroglucinol (VONGERICHTEN), A., i, 647.
- Diazotisation** of dinitro-*o*-anisidine (MELDOLA and EYRE), T., 1077; P., 1901, 131, 185.
- iso***Diazotisation** of arylamines (BAMBERGER and RÜST), A., i, 171.
- Diazotolueneimide**. See Tolueneazoinimide.
- Diazoxide** from the action of a nitrite on dinitro-*o*-anisidine and its compound with  $\beta$ -naphthol (MELDOLA and EYRE), T., 1078; P., 1901, 132, 185.
- Dibenzamide**, preparation of (TITHERLEY), T., 395; P., 1901, 29.
- Dibenzamidinecarbamide**, *di-p*-nitro- (RAPPEPORT), A., i, 569.
- Dibenzenethiolsulphonic acid**, diazoaryl esters (TRÖGER and EWERS), A., i, 172.
- Dibenzenzylazoxime**, dinitro- (BAMBERGER and SCHEUTZ), A., i, 548.
- Dibenzoyl carbonate** (KNOLL & Co.), A., i, 703.
- Dibenzoylethylenedicarboxylic acid**, ethyl ester, *cis*- and *trans*-. See Dibenzoylmalic and Dibenzoylfumaric acids.
- s*-**Dibenzoylethylenes**, stereoisomeric, and their dibromides (PAAL and SCHULZE), A., i, 154.
- Dibenzoylfumaric acid** (*trans-dibenzoylethylenedicarboxylic acid*), ethyl ester (PAAL and SCHULZE), A., i, 148.
- 2:5-Dibenzoylfurfuran** and its diphenylhydrazone and dioximes, and the action of nitric acid on (PHELPS and HALE), A., i, 555.
- Dibenzoylhomogentisic acid**, amide of (ORTON and GARROD), A., ii, 614.
- s*-**Dibenzoylhydrazide** (AUTENRIETH and SPIESS), A., i, 230; (STOLLÉ), A., i, 316.
- Dibenzoylmalic acid**, ethyl ester (*ethyl cis-dibenzoylethylenedicarboxylate*) (PAAL and SCHULZE), A., i, 148.

- $\alpha$ -Dibenzoylpropane and Dibenzoyldiphenylbutadiene**, reduction of (JAPP and MICHIE), T., 1010; P., 1901, 173.
- Dibenzoyltyrosinamide** (ORTON), T., 1355; P., 1901, 200.
- Dibenzyl, 2:2'-dinitro-** (LAPWORTH), T., 1275.
- Dibenzylacetonedicarboxylic acid**, and its ethyl ester (FICHTER and SCHIESS), A., i, 545.
- Dibenzylamine**, action of acetyl bromo- and acetylchloro-amino-2:4-dichlorobenzenes on (CHATTAWAY and ORFON), T., 464; P., 1901, 38.
- as*-Dibenzylcyanamide** (HANTZSCH and VAGT), A., i, 195.
- Dibenzylidinitrile**. See *s*-Diphenylethane, 4:4'-dicyano-.
- s*-Dibenzylhydrazine**, *di-o*-chloro-, and its diacetyl, dibenzoyl, and dinitroso-derivatives and picrate (CURTIUS and PAULI), A., i, 429.
- as*-Dibenzylhydrazine** (CURTIUS and FRANZEN), A., i, 293.
- Dibenzylidenacetone**, sulphonal derivatives of (POSNER), A., i, 474.
- Dibenzyl ketone**, condensation of, with benzil (HENDERSON and CONSTORPHINE), T., 1256; P., 1901, 190.
- $\beta$ -Dibenzylmalamic acid** and its isomeride (LUTZ), A., i, 9.
- Dibenzylmethane** and its *di*- and *tetra*-nitro-, *-oxychlorophosphine*, *-phosphinic* and *-phosphinamic acids* and their derivatives (MICHAELIS and FLEMMING), A., i, 438.
- Dibenzylphosphine derivatives** (MICHAELIS and CIANI), A., i, 301.
- $\beta$ -Dibenzylsulphonebutyric acid**, ethyl ester, and its  $\alpha$ -mono- and di-methyl and *-ethyl* derivatives (POSNER), A., i, 704.
- $\gamma$ -Dibenzylsulphonevaleric acid** and its ethyl ester (POSNER and DEINHARDT), A., i, 703.
- Dibenzyltetrazone** (CURTIUS and FRANZEN), A., i, 293.
- Dibenzyl-*p*-toluidine**, *m*-dinitro- (PURGOTTI and MONFI), A., i, 22.
- Di-*tribromo-m*-hydroxyphenyl**di-*tribromo-o*-quinophenylene ether (JACKSON and KOCH), A., i, 598.
- Disobutylamine**, specific heat and latent heat of evaporation of (KAHLENBERG), A., ii, 492.
- thiobenzoate** (WHEELER), A., i, 636.
- d-d*-Dibutylcarbamide** (GADAMER), A., i, 582.
- Disobutylcarbinol** (*nonyl alcohol*) (GRIGNARD), A., i, 250.
- and its acetate, synthesis of (GRIGNARD), A., i, 679.
- 3:6-Dibutyl- and 3:6-Diisobutyl-2:5-diketopiperazine** (*leucinimide*) (FISCHER), A., i, 193.
- Diisobutyl diketoxime** (PONZIO), A., i, 452.
- Diisobutyloxydiphenylmethane** (MACKENZIE), T., 1207; P., 1901, 150.
- Dibutyryl**. See Dipropyl diketone.
- "Dibutyrylacetoacetic acid, methyl ester"** (BOUVEAULT and BONGERT), A., i, 312.
- s-n*-Dibutyrylhydrazide** (AUFENRIETH and SPIESS), A., i, 230; (STOLLÉ), A., i, 316.
- Dicarbanilindiol- $\psi$ -cumylethylenediamine** (SENIER and GOODWIN), T., 260; P., 1900, 228.
- Dicarbanilindiphenylethylenediamine** (*ethylenedicarbanilide*) (SENIER and GOODWIN), T., 259; P., 1900, 228.
- Dicarbanilindiol-*o*-, *m*-, and *p*-tolylethylenediamines** (SENIER and GOODWIN), T., 259; P., 1900, 228.
- Dicarbanilindioxilylethylenediamine** (SENIER and GOODWIN), T., 260; P., 1900, 229.
- Dicarboxydimethyltrimethylenemalononic acid**, ethylester (PERKIN and THORPE), T., 763; P., 1900, 150; 1901, 111.
- Dicarboxydimethyltrimethylene-bromo- and -ethyl-malononic acids**, ethyl esters (PERKIN and THORPE), T., 769.
- Dicarboxyglutaconic acid**, and its ethyl esters, bimolecular (GUTHZEIT and WEISS), A., i, 314.
- Dicarbylamines**, aromatic, preparation of (KAUFER), A., i, 462.
- Dicatecholcarbohydrazide** (EINHORN and ESCALES), A., i, 652.
- Dicinnamyltartaric acid**, *tetrabromo-* (COHEN and WHITELEY), T., 1308; P., 1900, 213.
- Dicumarylketoxime** (STOERMER and CALOV), A., i, 336.
- Dieresotides**, *o*-, *m*-, and *p*- (EINHORN and PFEIFFER), A., i, 712.
- Dicrotonic acid** ( *$\beta$ -methyl- $\alpha$ -ethylideneglutaric acid*) and its esters, anhydride, and dibromide (v. PECHMANN), A., i, 63.
- Di- $\psi$ -cumylethylenediamine** and its nitrate, mercurichloride and platinumchloride, and its dinitro-derivatives (SENIER and GOODWIN), T., 256; P., 1900, 228.
- action of phenylcarbimide on (SENIER and GOODWIN), T., 260; P., 1900, 228.
- Di- $\psi$ -cumylphosphine** derivatives (MICHAELIS and HESS), A., i, 302.
- Di- $\psi$ -cumylpiperazine** (SENIER and GOODWIN), T., 257; P., 1900, 228.

- Dicyclic compounds**, systematisation and nomenclature of (V. BAEYER), A., i, 135.
- Dielsalidylthiocarbamide** (KRAFFT and TRITSCHLER), A., i, 116.
- Dielectric constants**. See Electrochemistry.
- Dietary studies** (GRINDLEY, SAMMIS, LADD, BEVIER, and SPRAGUE), A., ii, 518.
- 2:4-Diethoxybenzoylmethylacetone** (V. KOSTANECKI and LLOYD), A., i, 736.
- Diethoxybenzoylpyruvic acids**, 2:4- and 2:5-, ethyl esters (V. KOSTANECKI, PAUL, and TAMBOR), A., i, 735.
- Diethoxybenzylidene** (MACKENZIE), T., 1213; P., 1901, 150.
- Diethoxycarminone**, dibromo- (LIEBERMANN and LANDAU), A., i, 546.
- Diethylacetal**, heat of combustion and of formation of (DELÉPINE), A., ii, 6.
- $\alpha\alpha$ -Diethylacetonedicarboxylic acid**, ethyl ester (CONRAD), A., i, 66.
- Diethylaminoanthraquinone** (HALLER and GUYOT), A., i, 279.
- Diethylamino-benzoyl- and -benzyl-tetrachlorobenzoic acids**, and the acetate, anhydride, and esters of the benzoyl derivative (HALLER and UMBGROVE), A., i, 469.
- 3-Diethylamino-5:6:7:8-tetrachloroanthraquinone** (HALLER and UMBGROVE), A., i, 644.
- Diethylamino-dihydroxyanthraquinone and -hydroxyanthraquinonesulphonic acid** (HALLER and GUYOT), A., i, 279.
- Diethylamino-*m*-hydroxy-benzoyl- and -benzyl-tetrachlorobenzoic acids** (HALLER and UMBGROVE), A., i, 644.
- m*-Diethylaminohydroxybenzoylbenzoic acid** and its di- and tetra-chloro-derivatives, colouring matters from when condensed with the sulphonic acids of the hydroxynaphthalenes (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 734.
- Diethylamino-*m*-hydroxybenzylbenzoic acid** (HALLER and GUYOT), A., i, 276.
- 4-Diethylaminophenyl- $\mu$ -cyanoazomethine-4'-nitrophenyl hydrochloride** (SACHS and BRY), A., i, 229.
- Diethylaminophenylglyoxylic acid** (BOEHRINGER & SONS), A., i, 713.
- Diethylamylcarbinol** (*decyl alcohol*) (MASSON), A., i, 250.
- $\alpha\beta$ -Diethylanthracetonebenzil** (JAPP and MELDRUM), T., 1041; P., 1901, 176.
- Diethylarsine**, compounds of, with mercury salts (BIGINELLI), A., i, 20. detection of (GOSIO), A., ii, 193.
- Diethylisobutylcarbinol** (*nonyl alcohol*) (MASSON), A., i, 249.
- Diethyl diketone** and its dioxime (PONZIO), A., i, 452.
- 3:6-Diethyl-2:5-diketopiperazine** (FISCHER), A., i, 193.
- Diethyldisulphone-diphenylmethane** and - $\alpha$ -phenylethane (POSNER), A., i, 88.
- Diethyleneanisole**, tetrachloro- (KUNCELL and ERAS), A., i, 75.
- Diethylenediaminecobalt salts**, dichloro-, stereoisomeric (WERNER), A., i, 510.
- 1:2-chloronitrito- (WERNER and GERB), A., i, 512.
- 1:6-chloronitrito- (WERNER), A., i, 512.
- dinitrito-, stereoisomeric (WERNER and HUMPHREY), A., i, 511.
- Diethylformal**, heat of combustion and of formation of (DELÉPINE), A., ii, 6.
- $\beta\beta$ -Diethylglutaric acid** (*heptanedicarboxylic acid*) (GUARESCHI and PEANO), A., i, 631.
- Diethylhexamethylenediurethane** and its carbamide (CURTIUS and CLEMM), A., i, 69.
- Diethyl ketone**, bromo-derivatives of (PAULY), A., i, 505.
- Diethyloctomethylenediurethane** and its carbamide (CURTIUS and STELLER), A., i, 70.
- Diethyloctylcarbinol** (*tridecyl alcohol*) (MASSON), A., i, 250.
- $\beta$ -Diethylsulphone- $\alpha$ -dimethyl- and  $\alpha$ -diethyl-butyric acids**, ethyl esters (POSNER and EBÈRS), A., i, 705.
- $\beta\beta$ -Diethylsulphone- $\gamma$ - and - $\delta$ -methylpentane- $\delta$ - and - $\gamma$ -ones** (POSNER), A., i, 15.
- $\beta\beta$ -Diethylsulphonepentane- $\gamma$  one** (POSNER), A., i, 15.
- $\alpha\alpha$ -Diethylthiol- $\alpha$ -phenylethane** (POSNER), A., i, 88.
- 4:4-Diethyltrimethylenedicarbonimide**, 3:5-dicyano- (PEANO), A., i, 347.
- Diethyltrimethylenurethane** (CURTIUS and CLEMM), A., i, 69.
- DIFFUSION** :—
- Diffusion** of gold in solid lead at the ordinary temperature (ROBERTS-AUSTEN), A., ii, 9.
- of hydrogen through palladium (WINKELMANN), A., ii, 646.
- Diffusion coefficients**, method of determining (BRUNER and TOLLOCZKO), A., ii, 11.
- Osmosis** of liquids across animal membranes (FLUSIN), A., ii, 148.
- across a membrane of copper ferrocyanide (FLUSIN), A., ii, 439.



## DIFFUSION :—

- Osmosis** in marine invertebrates (QUINTON), A., ii, 116.
- Osmotic measurements**, the "myriotone" as unit in (ERRERA), A., ii, 375.
- membranes, preparation of, by electrolysis (MORSE and HORN), A., ii, 543.
- Osmotic pressure** and electromotive force (LEMFELDT), A., ii, 4, 5; (KRUGER), A., ii, 145.
- exact relation between vapour pressure and (NOYES), A., ii, 87; (DIETERICI), A., ii, 439.
- extent to which the interaction of ionic charges diminishes (v. TURIN), A., ii, 375.
- effect of, on the form and structure of plants (BEAUVIERE), A., ii, 183.
- of complex solutions (JAKOWKIN), A., ii, 87.
- of dog's saliva (NOLF), A., ii, 176.
- Diformazyl phenyl ketone**, *di-m*-nitro- (BAMBERGER and SCHMIDT), A., i, 556.
- Difurfuryldicarbonylsuccinic acid** (FICHTER and SCHEUERMANN), A., i, 479.
- Difurfurylethanedialdehyde** and its oxidation and the action of phenylhydrazine and of hydroxylamine on (FENTON and GOSTLING), T., 812; P., 1901, 119.
- Difurfurylethanedicarboxylic acid** and its barium salt (FENTON and GOSTLING), T., 814; P., 1901, 119.
- $\alpha\beta$ -Difurfurylidene- $\beta$ -propiolic acid** and **Difurfurylidene- $\beta$ -succinic acids** and their salts (FICHTER and SCHEUERMANN), A., i, 479.
- Digestibility** of butter and its substitutes (WIBBENS and HUIZENGA), A., ii, 253.
- of dextrose (DUCLERT and SÉNÉQUIER), A., ii, 458.
- Digestion**, influence of, on animal heat (REICHERT), A., ii, 28.
- of food by man (ATWATER and BENEDICT), A., ii, 253.
- cellulose, in the alimentary canal (MULLER), A., ii, 252.
- gastric, in Elasmobranchs (WEINLAND), A., ii, 458.
- in selachian fishes (WEINLAND), A., ii, 252.
- action of "saccharin" on (CHASSEVANT), A., ii, 323.
- peptic (MALFATTI), A., ii, 67.
- proteid, theory of (SAWJALOFF), A., ii, 403.
- salivary, of carbohydrates in the stomach (HENSAY), A., ii, 666.

- Digestion** and metabolism in Echinoderms (COHNHEIM), A., ii, 668.
- in the small intestine (KUSCHER and SEEMANN), A., ii, 667.
- in the ascidia of *Nepenthes* (CLAUTRIAU), A., ii, 183.
- See also Gastric juice and Stomach.
- Digestive power** of gastric juice (FROUIN), A., ii, 561.
- Digitonin**, amorphous and crystalline (CLOETTA), A., i, 478.
- Digitoxin**, toxicological detection of (VITALI), A., ii, 50.
- Diglycerylcarbamide** (CURTIUS and HESSE), A., i, 71.
- Diguanides**,  $\alpha$ -disubstituted (CRAMER), A., i, 771.
- $\beta$ -Diheptioic acid** (GUERBET), A., i, 183.
- $\beta$ -Diheptyl alcohol** (GUERBET), A., i, 182.
- Dihydro $\alpha$ -scutetinsulphonic acid** and its sodium salt (LIEBERMANN and WIEDERMANN), A., i, 736.
- Dihydroisovalantolic acid**, and amide, and **Dihydroisovalantolactone** (SPRINZ), A., i, 325.
- Dihydroanthracene**, refraction and dispersion of (PELLINI), A., ii, 365.
- Dihydroanthraphenone** (LIPPMANN and KEPPICH), A., i, 37.
- $\gamma$ -Dihydro- $\alpha$ -campholytic acid** and **Dihydro- $\beta$ - $\alpha$ -campholytic acid**,  $\alpha$ -bromo- (NOYES and BLANCHARD), A., i, 664.
- Dihydrocarveolacetic acid** and its ethyl ester (WALLACH and SPERANSKI), A., i, 156.
- Dihydrocollidinedicarboxylic acid**, ethyl ester, Hantzsch's synthesis of (RABE and BILLMANN), A., i, 164.
- Dihydrofurfuran-2:5-dicarboxylic acids**,  $\alpha$ -,  $\beta$ -, and  $\gamma$ -, and their dibromides (HILL), A., i, 555; (HILL and WHEELER), A., i, 556.
- Dihydroindigotin** (VAUBEL), A., i, 715.
- Dihydroisoindeole** (*o*-xytylenimine), and its 5-amino- and 5-nitro-, and their salts, and its benzoyl and thiocarbamide derivatives (FRANKEL), A., i, 44.
- Dihydroinfracampholenic acid**, *di*- and *tri*-bromo- (FORSTER), T., 114; P., 1900, 211.
- Dihydrolauronic acid**, amino-, nitrile, hydrochloride and picrate of (TIEMANN and TIGGES), A., i, 19.
- di*bromo- (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 7.
- Dihydromyrcene** and **cycloDihydromyrcene** and their derivatives (SEMMLER), A., i, 732.
- Dihydronaphthalene**, refraction and dispersion of (PELLINI), A., ii, 365.
- Dihydrophenanthrene oxide**, nitro- (SCHMIDT), A., i, 76.

- Dihydrotetrazines** (*bisdiazomethane*) (HANTZSCH and LEHMANN), A., i, 678.
- Dihydrotoluene** (*methylcyclohexadiene*) (HARRIES), A., i, 194.
- Dihydrotruxone** (MANTHEY), A., i, 31.
- Dihydroxyalkoxy-pentanthranes**, chloro- (BERTHEIM), A., i, 467.
- Dihydroxyanhydro-2:4-dimethyl-1:4-benzopyranols**, 5:7- and 7:8-, and their acetyl derivatives, hydrochlorides, and picrates (BÜLOW and WAGNER), A., i, 401.
- Dihydroxyanthraquinonesulphonic acid**, diamino- (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 760.
- 3:4-Dihydroxybenzoic acid**. See Protocatechuic acid.
- mp*-**Dihydroxybenzylideneindanone** (FEUERSTEIN), A., i, 279.
- Dihydroxyapocamphoric acid** (KOMPA), A., i, 668.
- o*-**Dihydroxycatechol ether**, *herabromo*- (JACKSON and KOCH), A., i, 598.
- Dihydroxydiethyl-*n*- and -*iso*-butylamines and -propylamines, -*iso*amylamine, -heptylamine and -hexylamine and their salts and picrolonates** (MATTHES), A., i, 260.
- Dihydroxydihydrocampholytic acid**,  $C_9H_{16}O_4$ , and its isomeride (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 6.
- Dihydroxydihydrocitronellaldimethyl-acetal**, and its mono- and di-aldehyde and ketoaldehyde (HARRIES and SCHLAUWECKER), A., i, 730.
- Dihydroxydihydrocyclogeranic acid** and its ethyl ester (TIEMANN and TIGGES), A., i, 158.
- Dihydroxydihydrolauronic acid** (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 7.
- Dihydroxydihydromesityl oxide**. See Trimethyltriase.
- 2:8-Dihydroxy-3:7-dimethylacridine** (CASSELLA & Co.), A., i, 752.
- aa*-**Dihydroxy- $\beta\beta$ -dimethylglutaric acid** and its salts, and condensation of, with *o*-tolylenediamine (PERKIN and THORPE), T., 757; P., 1901, 113; (PERKIN, THORPE, and WALKER), T., 781.
- lactone of (PERKIN and THORPE), T., 756; P., 1901, 112.
- ay*-**Dihydroxy- $\beta\beta$ -dimethylpropane** (WESSELY), A., i, 256.
- 8:8'-Dihydroxy-2:2'-dinaphthylamine-6:6'-disulphonic acid** (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 696.
- 2:2'-Dihydroxydiphenyl** and its diacetyl derivative (KRAEMER and WEISSGERBER), A., i, 535.
- p*-**Dihydroxydiphenyl-4:6-dinitro-1:3-phenylenediamine** and its dicarboxylic and disulphonic acids (BADISCHE ANILIN- and SODA-FABRIK), A., i, 755.
- o*-**Dihydroxydiphenylsulphone** (JACKSON and KOCH), A., i, 597.
- Dihydroxyfluorescein** and its tetracetyl derivative (LIEBERMANN), A., i, 595.
- constitution of, and its triacetyl and tetrabenzoyl derivatives (FEUERSTEIN and DUTOIT), A., i, 723.
- ammonium salt and dibromo- (THIELE and JAEGER), A., i, 723.
- Dihydroxymethoxybenzoic acid** (*phloroglucinolcarboxylic acid*, *methyl ether*) and its methyl ester (HERZIG and WENZEL), A., i, 473.
- 1:5-Dihydroxy-3-methoxyxylene** hydrochloride, 4-amino-, and its tetracetyl derivative (BOSSE), A., i, 207.
- s*-**Dihydroxyoxamide** and its diacetate (PICKARD and CARTER), T., 846; P., 1901, 123.
- 2:3-Dihydroxycyclopentane**, *cis*- and *trans*-1:4-dibromo-, and their *di-p*-nitrobenzoyl derivatives (THIELE), A., i, 181.
- Dihydroxypentanthrene**, halogen derivatives of (LIEBERMANN and LANSER), A., i, 466; (BERTHEIM), A., i, 468.
- Dihydroxy-2-phenylanhydro-4-methyl-1:4-benzopyranols**, 5:7- and 7:8-, and their salts, acetyl derivatives, and anhydro-bases (BÜLOW and WAGNER), A., i, 560.
- o*-**Dihydroxyphenylhydroxy-*o*-quinone** and its tribenzoyl derivative, and the action of phenylhydrazine on (JACKSON and KOCH), A., i, 597.
- $\beta$ -2:4-Dihydroxyphenylmaleic acid** (v. PECHMANN and GRAEGER), A., i, 287.
- Dihydroxypivalic acid**. See Methyl-dimethylolacetic acid.
- 2:6-Dihydroxy-4-isopropyl-dihydroresorcinol**. See 2:6-Diketo-4-isopropyl-hexamethylene.
- $\gamma\delta$ -Dihydroxypropylmalonamide** (TRAUBE and LEHMANN), A., i, 502.
- 2:6-Dihydroxypyridine**, 3:5-dicyano-, and **2:6-Dihydroxypyridine-3-carboxylamide**, 5-cyano-, ammonium derivatives of (ERRERA), A., i, 43.
- 2:6-Dihydroxypyridine-3:5-dicarboxylamide** (ERRERA), A., i, 43.
- 2:4-Dihydroxyquinoline**, preparation of (BADISCHE ANILIN- and SODA-FABRIK), A., i, 751.
- Dihydroxyquinone**, bromo-, and its oxime, phenylhydrazone, and diacetyl derivative (MANUELLI), A., i, 216.

- Dihydroxystearic acid**, preparation, melting point, and calcium salt of, and the action of fused potash on (LÉ SUEUR), T., 1315; P., 1901, 91.
- Dihydroxytartaric acid**, combination of, with 6-chloro-2:3-tolylenediamine (COHN), A., i, 637.
- 4:4'-Dihydroxytetraphenylmethane** and its diacetyl compound (MACKENZIE), T., 1209; P., 1901, 150.
- 2:6-Dihydroxy-3:4:4-trimethyldihydroresorcinol**. See 2:6-Diketo-3:4:4-trimethylhexamethylene.
- Dihydroxytriphenylmethane** and its diacetyl derivative (MACKENZIE), T., 1216.
- Dihydroxytrismethoxycarminonecarboxylic acid**, methyl ester (LIEBERMANN and LANDAU), A., i, 545.
- 2:5-Dihydroxy-1:3-xylene** (BAMBERGER and RISING), A., i, 531.
- 4- $\alpha$ -Diketobutylpyridine**. See 4-Acetoacetylpyridine.
- Diketoapocamphoric acid**, methyl and ethyl esters (KOMPPA), A., i, 668.
- Diketodihydropentanthrenedicarboxylic acid**, bromo-, ethyl ester (LIEBERMANN and LANSER), A., i, 466.
- p-Diketoexamethylene**, acetals of (STOLLÉ), A., i, 390.
- Diketohydrindene**. See Indanedione.
- Diketohydrindenecarboxylic acid**, bromo- and chloro-, ethyl esters (FLATOW), A., i, 543.
- Diketones**, mercaptols from (POSNER), A., i, 14; (TARBOURIECH), A., i, 329.
- $\alpha$ -Diketones**, preparation of (PONZIO), A., i, 577.
- conversion of  $\alpha\beta$ -unsaturated diketones into (PAULY and v. BERG), A., i, 506.
- combination of, with phenylhydrazine (PETRENKO-KRITSCHENKO and LORDKIPANIDZÉ), A., i, 505; (PETRENKO-KRITSCHENKO and ELTSCHANINOFF), A., i, 506.
- $\beta$ -Diketones**, synthesis of (MOUREU and DELANGE), A., i, 352.
- 1:2-Diketocyclopentane phenylhydrazone** (DIECKMANN), A., i, 540.
- 4- $\alpha$ -Diketo- $\gamma$ -phenylpropylpyridine**. See 4-Benzoylacetylpyridine.
- 2:6-Diketo-4-isopropylhexamethylene** and its dioxime and 3-carboxylic acid, ethyl ester (CROSSLEY), P., 1901, 172.
- 2:6-Diketo-3:4:4-trimethylhexamethylene** (2:6-dihydroxy-3:4:4-trimethyldihydroresorcinol), and its silver salt, dioxime, and ethyl ester, and action of bromine, phosphorus pentachloride and sodium hypobromite on (CROSSLEY), T., 141; P., 1900, 90.
- 2:6-Diketo-3:4:4-trimethylhexamethylene** (2:6-dihydroxy-3:4:4-trimethyldihydroresorcinol), 1-mono- and 1:1-dibromo- (CROSSLEY), T., 145; P., 1900, 91.
- 2:6-Diketo-3:4:4-trimethylhexamethylene-3-carboxylic acid**, ethyl ester and its hydrolysis (CROSSLEY), T., 141; P., 1900, 90.
- Diketovalerolactone- $\gamma$ -carboxylic acid**,  $\beta$ -phenylhydrazone (WOLFF and HEROLD), A., i, 503.
- Dilichenostearic acid** and its salts (HESSE), A., i, 87.
- Dimethyl** and its isomeride (KURSANOFF), A., i, 553.
- Dimethylmethylal** (WEDEKIND), A., i, 393.
- 1:3-Dimethoxybenzene**, 4-nitro- (FREYSS), A., i, 321.
- o-Dimethoxybenzoin** and its methyl ether, preparation of (IRVINE), T., 671; P., 1901, 88.
- Dimethoxybenzylidene** (MACKENZIE), T., 1212; P., 1901, 150.
- 2:6-Dimethoxy-4:5-dimethylpyrimidine** (SCHLENKER), A., i, 764.
- Dimethoxydiphenyldihydrazonocyanacetic acid**, ethyl ester (LAX), A., i, 231.
- Dimethoxydiphenylmethane**, action of nitric acid on (MACKENZIE), T., 1211; P., 1901, 150.
- 5:7-Dimethoxy-2'-ethoxyflavone** (v. KOSTANECKI and WEBEL), A., i, 479.
- 5:7-Dimethoxy-3'-ethoxyflavone** (v. KOSTANECKI and STEUERMAN), A., i, 223.
- 6:7-Dimethoxy-3-methyl-coumarilic acid** and -coumarone (v. PECHMANN and HANKE), A., i, 211.
- 5:7-Dimethoxy-3':4'-methylenedioxyflavone** (v. KOSTANECKI, RÓŻYCKI, and TAMBOR), A., i, 92.
- d-Dimethoxysuccinic acid** and its esters, salts, and amide (PURDIE and IRVINE), T., 957; P., 1901, 157.
- esters, influence of solvents on the rotation of (PURDIE and BARBOUR), T., 971; P., 1901, 158.
- Dimethyl peroxide** (v. BAEYER and VILLIGER), A., i, 309.
- phenyliminothiolcarbonate (WHEELER and DUSTIN), A., i, 25.
- sulphate, preparation of (BLACKLER), A., i, 577.
- Dimethylacetal**, heat of combustion and of formation of (DELÉPINE), A., ii, 6.
- $\alpha\alpha'$ -Dimethylacetonedicarboxylic acid**, triethyl ester (v. PECHMANN), A., i, 64.

- Dimethylacetylacetonitrile** (VAN REY-MENANT), A., i, 126.
- Dimethylacetylene.** See Butinene.
- $\beta\beta$ -Dimethylacryl-benzylanilide** and **-diphenylamide** (BISCHOFF), A., i, 527.
- Dimethylacrylic acid.** See Pentenoic acid.
- $\beta\beta$ -Dimethylacryl-methyl and -ethyl-anilides** (BISCHOFF), A., i, 527.
- $\alpha\alpha'$ -Dimethyladipic acids** (*hexanedicarboxylic acids*), synthesis of (MOHR), A., i, 364.
- $\beta\beta$ -Dimethyladipic acid** (*hexanedicarboxylic acid*) (NOYES), A., i, 632.
- $\delta\delta$ -Dimethylallylacetoacetic acid**, ethyl ester (IPATIEFF), A., i, 256.
- Dimethylallylcarbinol**, hydrocarbon,  $C_6H_{10}$ , from (LJUBARSKY), A., i, 181.
- Dimethylaminobenzaldehyde**, action of, on urine (PRÖSCHER), A., ii, 260.
- 2-Dimethylaminobenzoylbenzoic acid**, its amide, chloride, and phenylhydrazide, 3:6-dichloro- (SEVERIN), A., i, 386.
- nitro- (HALLER and GUYOT), A., i, 324.
- Dimethylaminobenzoyltetrachlorobenzoic acid**, nitro- and nitroso- (HALLER and UMBROVE), A., i, 644.
- Dimethylamino-benzoyl- and -benzyl-tetrachlorobenzoic acids** and the acetate, anhydride, and esters of the benzoyl derivative (HALLER and UMBROVE), A., i, 469.
- p*-Dimethylaminobenzylidenearbituric acid** and its hydrochloride (WEINSCHENK), A., i, 528.
- 4-Dimethylaminobenzylideneindanone**, and 3-nitro- (NÖLTING and BLUM), A., i, 728.
- p*-Dimethylaminobenzylideneindanone** (FEUERSTEIN), A., i, 279.
- Dimethylaminocycloheptane** and its salts and **4-Dimethylaminocycloheptanol** (WILLSTÄTTER), A., i, 225.
- Dimethylaminocycloheptenes.** See Methyltropans.
- Dimethylaminohydroxyanthraquinone-sulphonic acid** (HALLER and GUYOT), A., i, 280.
- Dimethylaminomethylenementhone** (FARRWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 692.
- p*-Dimethylaminophenylaminobenzyl cyanide** (SACHS), A., i, 272.
- 4-Dimethylamino-1-phenyl-2:3-dimethyl-5-pyrazolone salts** (EBERT and REUTER), A., i, 294.
- Dimethylaminophenylglyoxylic acid** and its phenylhydrazone (BOEHRINGER & SONS), A., i, 713, 714.
- p*-Dimethylaminophenylmercuric salts** (DIMROTH), A., i, 440.
- Dimethylamylcarbinol** (*octyl alcohol*) (MASSON), A., i, 250.
- Dimethylisomylcarbinol** (*octyl alcohol*) and its acetate (GRIGNARD), A., i, 680.
- Dimethylanhydracetonebenzils**,  $\alpha\beta$ - and  $\beta\beta$ -, and their isomeride (JAPP and MELDRUM), T., 1036; P., 1901, 175.
- Dimethylaniline**, action of cyanogen bromide on (SCHOLL and NÖRR), A., i, 376.
- action of mercury fulminate on (SCHOLL and BERTSCH), A., i, 523.
- oxide, preparation of and action of heat on (BAMBERGER and LEYDEN), A., i, 200.
- Dimethylaniline**, *m*- and *p*-nitro-, electrolytic reduction of (ROHDE), A., i, 135.
- Dimethylanilinephthalein**, amino- and nitro-, and the acetyl derivative and isomeride of the amino-compound (HALLER and GUYOT), A., i, 325.
- Dimethylanilinesulphonic acid** (CLAYTON ANILINE Co.), A., i, 694.
- 2:5-Dimethylbenzaldehyde**, and its phenylhydrazone, oxime, aldazine, and aniline and benzylidene derivatives (HARDING and COHEN), A., i, 725.
- 1:3-Dimethyl-benziminazole**, and **-benziminazolone**, and their salts (FISCHER and FUSSENEGGER), A., i, 414.
- 1:5-Dimethylbenziminazole** tartrate (PINNOW), A., i, 485.
- 2:4-Dimethylbenzoic acid** (*xylic acid*), formation of (LEES and PERKIN), T., 347; (PERKIN and YATES), T., 1883.
- 2:5-Dimethylbenzoic acid** (HARDING and COHEN), A., i, 725.
- 6:8-Dimethyl-1:4-benzopyrone** and its **2-carboxylic acid** (RUHEMANN and WRAGG), T., 1189; P., 1901, 187.
- 2:4-Dimethylbenzoylbenzene- $\alpha$ -sulphonic acid** and its salts (KRANNICH), A., i, 153.
- Dimethyltetrabromohydrindacenedicarboxylic acid** (EPHRAIM), A., i, 688.
- $\beta\beta$ -Dimethylbutane- $\alpha\alpha\delta$ -tricarboxylic acid** and its triethyl ester and calcium salt (NOYES), A., i, 631.
- Dimethylbutane- $\alpha\gamma\gamma$ -tricarboxylic acid**, ethyl ester (MICHAEL), A., i, 124.
- Dimethylbutylene.** See Hexylene.
- Dimethyleincholeuponic acid** and its diethyl ester and salts (SKRAUP), A., i, 226.
- 2:5-Dimethylcinnamic acid** (HARDING and COHEN), A., i, 726.
- 4:6-Dimethylcoumaranone**, synthesis of, and its oxime (STOERMER and BARTSCH), A., i, 95.

- Dimethylcoumarone**, *tri-* and *tetra-*bromo- (V. BAeyer and SEUFFERT), A., i, 217.
- $\beta\zeta$ -Dimethyl- $\beta$ -decene- $\theta$ -ol** and its acetate (GRIGNARD), A., i, 679.
- Dimethyldiazoaminotoluene**, *dinitro-diamino-* (PINNOW), A., i, 138.
- Dimethyldiethyltetra-chlororheda-mine** (HALLER and UMBGROVE), A., i, 644.
- Dimethyldihydroisindole** and its salts (FRÄNKEL), A., i, 45.
- Dimethyldihydrophthalidetriconic acid** (WOLFF and GABLER), A., i, 285.
- 3,6-Dimethyl-2,5-diketopiperazine** (FISCHER), A., i, 192.
- s*-Dimethylethylenes**. See  $\psi$ -Butylenes.
- Dimethylethylethoxyketopentamethylenedicarboxylic acid** (PERKIN and THORPE), T., 771; P., 1901, 112.
- $\alpha\alpha$ -Dimethyl- $\beta$ -ethylhydracrylic acid**. See  $\beta$ -Hydroxy- $\alpha\alpha$ -dimethylvaleric acid.
- Dimethylethylhydroxybutanetetracarboxylic acid**, lactone of (PERKIN and THORPE), T., 772; P., 1901, 112.
- Dimethylethylhydroxybutanetricarboxylic acids**, lactones of (PERKIN and THORPE), T., 773; P., 1901, 112.
- Dimethylethyltrimethylenedicarbonimides**, 1:4:4- and 4:4:1-, 3:5-dicyano- (GUARESCHI), A., i, 342.
- Dimethylfulvene**. See *iso*Propylidene-cyclopentene.
- Dimethylglutaconic acid** and its ethyl ester (PERKIN), P., 1900, 214.
- $\alpha\alpha$ -Dimethylglutaric acid** (*pentanedicarboxylic acid*), bromo-, ethyl ester (PERKIN), P., 1900, 214.
- $\beta\beta$ -Dimethylglutaric acid** (*pentanedicarboxylic acid*) (GUARESCHI), A., i, 630.  
and anhydride, preparation and bromination of (PERKIN and THORPE), T., 753; P., 1901, 112; (PERKIN, THORPE, and WALKER), T., 785.
- $\alpha\alpha$ -dicyano-, ethyl ester** (KOMPPA), A., i, 114.
- $\beta\zeta$ -Dimethyl- $\delta\zeta$ -heptadiene**. See Noninene.
- $\alpha\epsilon$ -Dimethylheptenoic acid** (*nonylenic acid*) and its amide and nitrile (TIE-MANN, LEMME, and KERSCHBAUM), A., i, 18.
- Dimethylhexamethylene**, chloro- (MABERY and SIEPLEIN), A., i, 306.
- Dimethylcyclohexanecarboxylic acid** (*hexahydro-xylic acid*), *mono-* and *di-*bromo-, methyl esters (LEES and PERKIN), T., 350; P., 1900, 20.
- Dimethylcyclohexanecarboxylic acids**, *cis-* and *trans-*, formation of (LEES and PERKIN), T., 356; P., 1900, 20.
- Dimethylcyclohexanecarboxylic acids**, bromo-, stereoisomeric (PERKIN and YATES), T., 1379.
- Dimethylcyclohexanes**, 1:2-, 1:3-, and 1:4- (SABATIER and SENDERENS), A., i, 459.
- 1:3-Dimethylcyclohexanol-3** (ZELINSKY), A., i, 661.
- 1:4-Dimethyl-3-cyclohexanone** and its oxime and 4-acetyl derivative (LESER), A., i, 278.
- Dimethylcyclohexenone** (BÉHAL), A., i, 278.
- Dimethylhexylcarbinol** (*nonyl alcohol*) (MASSON), A., i, 250.
- Dimethylhydroxypentamethylenecarboxylic acid** (PERKIN, THORPE, and WALKER), T., 783.
- 2:4-Dimethylimino- $\psi$ -quinol** (BAMBERGER and BRADY), A., i, 143.
- Dimethylindacene** and its dicarboxylic acid and its ethyl hydrogen ester (EPHRAIM), A., i, 688.
- Dimethylketodicyclopentanecarboxylic acid** (PERKIN, THORPE, and WALKER), T., 778.
- Dimethylketodicyclopentanedicarboxylic acids** (PERKIN, THORPE, and WALKER), T., 777.
- 5:5-Dimethyl-3-ketodicyclopentane-1 2 4-tricarboxylic acid**, ethyl ester, yellow sodium compound of, preparation and properties of (PERKIN and THORPE), T., 768; P., 1901, 110; (PERKIN, THORPE, and WALKER), T., 776; P., 1900, 150.
- Dimethylketopentamethylenecarboxylic acid** and its oxime and semicarbazone (PERKIN, THORPE, and WALKER), T., 782.
- Dimethylketotetramethylene-carboxylic acids**, isomeric, and -*tricarboxylic acid*, ethyl ester (MICHAEL), A., i, 125.
- $\beta\delta$ -Dimethylævulic acid** and its phenylhydrazone and semicarbazone (V. PECHMANN), A., i, 64.
- as*-Dimethylmalic acid** and anhydride (FICHTER and HIRSCH), A., i, 65.
- Dimethylmethylenemono- and di-cyanoacetic acids**. See  $\beta$ -Methylcrotonic acid,  $\alpha$ -cyano-, and  $\beta\beta$ -Dimethylglutaric acid,  $\alpha\alpha$ -dicyano-.
- Dimethyl-naphthalene- and -phenylene-carbamide** (FISCHER and FUSSENEGGER), A., i, 415.
- 1:2-Dimethyl- $\alpha$ -naphthiminazole** and its salts (FISCHER, FEZER, and REINDL), A., i, 414.
- 1:3-Dimethylnaphthiminazolone** (FISCHER and FUSSENEGGER), A., i, 415.

- $\beta\zeta$ -Dimethyl- $\beta\zeta\theta$ -nonatriene** and its isomeride and their hydrobromides (GRIGNARD), A., i, 681.
- $\beta\zeta$ -Dimethyl- $\beta\epsilon$ -nonodiene- $\theta$ -one- $\eta$ -carboxylic acid**, ethyl ester (CHEMISCHE FABRIK GRIESHEIM-ELEKTRON), A., i, 732.
- $\beta\zeta$ -Dimethyl- $\beta\epsilon$ -octadiene- $\theta$ -al**, and its oxime, phenylhydrazone, and semicarbazone (CHEMISCHE FABRIK GRIESHEIM-ELEKTRON), A., i, 731.
- $\beta\zeta$ -Dimethyl- $\beta\epsilon$ -octadiene- $\theta$ -mono- and - $\eta\theta$ -di-carboxylic acids** and the  $\eta$ -cyano-derivative of the  $\theta$ -acid (CHEMISCHE FABRIK GRIESHEIM-ELEKTRON), A., i, 731.
- Dimethyloctomethylenediurethane** (CURTIUS and STELLER), A., i, 70.
- $\beta\beta$ -Dimethylol- $\gamma$ -pentanol** and its triacetyl derivative (KOCH and ZERNER), A., i, 633.
- $\alpha\alpha$ -Dimethylolpropaldehyde** and its acetyl derivative, and their oximes (KOCH and ZERNER), A., i, 633.
- $\alpha\alpha$ -Dimethylolpropionitrile** and its acetyl derivative (KOCH and ZERNER), A., i, 633.
- $\beta\delta$ -Dimethyl- $\beta\delta$ -pentadiene**. See Heptinene.
- Dimethylpentamethylene**, chloro- (MABERY and SIEPLEIN), A., i, 306.
- 2:2-Dimethylcyclopentane-5-one-1:1-dicarboxylic acid**, ethyl ester (NOYES), A., i, 631.
- 2:5-Dimethylcyclopentane-1-mono- and -1:1-di-carboxylic acids**, *cis-cis*, and *cis-trans*, and their esters and salts (WISLIGENUS, PETERS, SCHRAMM, and MOHR), A., i, 664.
- Dimethyl-phenoxazines** and -phenoxazonium salts (KEHRMANN), A., i, 484.
- 3:7-Dimethyl-5-phenylacridine**, 2:8-diamino- (BADISCHE ANILIN- and SODA-FABRIK), A., i, 753.
- s-Dimethyl-o-phenylenediamine** and its hydrochloride, and action of acetic anhydride on (FISCHER and FUSSEN-EGGER), A., i, 414.
- 2:4-Dimethylphenylhydroxylamine** (BAMBERGER and BRADY), A., i, 142.
- Dimethylphloroglucinol benzyl ethers** (KAUFLEK), A., i, 207.
- methyl ether, proof of the position of the methyl groups in (BOSSE), A., i, 207.
- methyl ethers (HERZIG and HAUSER), A., i, 206.
- Dimethylphloroglucinolcarboxylic acid**, methyl ester, and its acetates (HERZIG and WENZEL), A., i, 473.
- 1:1-Dimethylcyclopropane**. See 1:1-Dimethyltrimethylenene.
- Dimethylpropane- $\alpha\gamma\gamma$ -tricarboxylic acid**, ethyl ester (MICHAEL), A., i, 124.
- Dimethylcyclopropylcarbinol** (ZELINSKY), A., i, 661.
- 1:3-Dimethyl-4-isopropylcyclohexanol-3** (ZELINSKY), A., i, 661.
- Dimethylpurones** (TAFEL), A., i, 238.
- 2:4-Dimethylpyridine**, 6-amino-3-cyano- (MOIR), P., 1901, 69.
- Dimethylpyridines**, 2:3- and 2:5-, from Scottish shale oil (GARRETT and SMYTHE), P., 1900, 190.
- See also Lutidine.
- 4:5-Dimethylpyrimidine** and its salts, chloro-, chloroamino-, and amino-derivatives (SCHLENKER), A., i, 763.
- 6-thio-, and its salts and 2-amino-derivative, and 2:6-dithio- (SCHLENKER), A., i, 763.
- 2:5-Dimethylpyrrole-1-acetic acid** (FISCHER), A., i, 192.
- Dimethylpyruvic acid** and its ethyl ester, and their oximes, and phenylhydrazone of the acid, and semicarbazone of the ester (BOUVEAULT and WAHL), A., i, 252.
- reactions of (WAHL), A., i, 364.
- 2:4-Dimethyl- $\psi$ -quinol** and its hydrate and benzoyl derivative (BAMBERGER and BRADY), A., i, 142.
- 2:8-Dimethylquinoline**, picrate of (EIBNER), A., i, 611.
- as-Dimethylsuccinic acid** (*butanedicarboxylic acid*) and anhydride, bromo- (FICHTER and HINSCH), A., i, 65.
- $\alpha\alpha$ -Dimethylsuccinic acid** (*butanedicarboxylic acid*) (PERKIN and THORPE), T., 762; (PERKIN, THORPE, and WALKER), T., 781; P., 1900, 149.
- Dimethylthujylamine** and its salts (TSCHUGAEFF), A., i, 601.
- Dimethyl-o-toluidine**, *m*-nitro- (Me:  $\text{NM}_2\text{:NO}_2=1:2:4$ ) and its reduction (ROHDE), A., i, 135.
- Dimethyl-p-toluidine**, 3-nitro-, hydrochloride, double salt of, with stannic chloride (PINNOW), A., i, 485.
- Dimethyl-m-toluidineazo-p-anisole**, -*p*-phenetole, and -*m*- and -*p*-toluene and their salts (SAMELSON), A., i, 170.
- Dimethyl-m-toluidineazobenzene** and its sulphonic acid (SAMELSON), A., i, 170.
- 1:1-Dimethyltrimethylene** {1:1-dimethylcyclopropane}, action of bromine on (GUSTAVSON), A., i, 61.
- Dimethyltrimethylenedicarboxylic acid**, and its ethyl ester, anilide, and anil acid (PAOLINI), A., i, 253.

- 4:5-Dimethyluracil.** See 2:6-Dioxy-4:5-dimethylpyrimidine.
- Dimethyluracils,** formulae of (BEHREND, MEYER, and BUCHHOLZ), A., i, 136.
- 2:6-Dimethylxanthine.** See Theophylline.
- Di- $\alpha$ - and - $\beta$ -naphthalenethiolsulphonic acids,** diazoaryl esters (TRÖGER and EWERS), A., i, 172.
- Dinaphthaphenazine-furan and -oxazine** (LINDENBAUM), A., i, 424.
- Dinaphthaxanthene** (FOSSE), A., i, 384. and bromo- and chloro- (FOSSE), A., i, 644.
- Dinaphthaxanthone,** chloro- and bromo- (FOSSE), A., i, 604.
- Di- $\alpha$ -naphthylcarbamide,** formation of (DIXON), T., 106; P., 1900, 208.
- Dinaphthylene alcohol.** See 2:2':2''-Trihydroxy-1:1':1''-trinaphthylmethane, *eso*anhydride of.
- Dinaphthylene glycol,** so-called, action of hydrobromic and hydrochloric acids on (FOSSE), A., i, 643. anhydride, so-called (FOSSE), A., i, 384.
- $\alpha$ -Dinaphthylene oxide** (HÖNIGSCHMID), A., i, 700.
- Di- $\alpha$ -naphthylethylenediamine,** action of phenylcarbimide on (SENIER and GOODWIN), T., 260; P., 1900, 228.
- Di- $\alpha$ - and - $\beta$ -naphthylsulphonebisdiazo-diphenyl and -ditolyl** (TRÖGER and EWERS), A., i, 172.
- Diethyl alcohol,** synthesis of (GUERBET), A., i, 307.
- Diopside** from Bosnia (KIŠPATIĆ), A., ii, 321.
- Diopase** from Siberia (ZAMBONINI), A., ii, 396.
- Diosphenol** (KONDAKOFF and BACHTSCHÉEFF), A., i, 334.
- 2:6-Dioxy-1-benzyl-4:4-dimethylpiperidine,** 3:5-dicyano- (GUARESCHI), A., i, 342.
- 2:6-Dioxy-4:4-dialkylpiperidines,** hydrolysis of (GUARESCHI), A., i, 630.
- Dioxydicyanogendicarboxylic acid** and its ethyl ester, potassium salt and amides (SCHOLL and SCHÖFER), A., i, 359. ethyl ester, isomeride of (BOUEVAULT and BONGERT), A., i, 579.
- 2:6-Dioxy-4:4-diethylpiperidine,** 3:5-dicyano- and its salts (PEANO), A., i, 346.
- 2:6-Dioxy-1:4-dimethyl-4-ethyl-, -4-propyl-, and -4-butyl-piperidine,** 3:5-dicyano- (GUARESCHI), A., i, 343.
- 2:6-Dioxy-4:4-dimethyl-1-ethyl- and -1-ethylene-piperidine,** 3:5-dicyano- (GUARESCHI), A., i, 342.
- 2:6-Dioxy-1:3-dimethylpyrimidine,** 4-mono- and 4:5-di-amino- (TRAUBE), A., i, 55.
- 2:6-Dioxy-4:5-dimethylpyrimidine** (SCHLENKER), A., i, 762.
- 2:6-Dioxy-4:4-dipropyl-, -4-phenyl-4-methyl-, -4-phenetyl-4-methyl-, -4-phenetyl-1:4-dimethyl-, -4-styryl-4-methyl-piperidine,** 3:5-dicyano- (GUARESCHI and BALDI), A., i, 345.
- 2:6-Dioxy-4-ethyl-4-propylpiperidine,** 3:5-dicyano- (GUARESCHI and BALDI), A., i, 345.
- 2:6-Dioxy-4-methyl-1:4-diethyl-, -4-ethyl-1-allyl-, -4-isopropyl-, -4-n- and -isobutyl-, -4-isohexyl-, -4-isohexenyl-, and -4-nonyl-piperidine,** 3:5-dicyano- (GUARESCHI), A., i, 343.
- 3:4-Dioxymethylene-hydratropaldehyde** and -hydratropic acid and its salts (BOUGAULT), A., i, 721.
- 2:6-Dioxy-1-mono- and -1:3-di-methylpyrimidine,** 4-imino-. See Malonylmethylcarbamides, imino-.
- 2:6-Dioxy-3-methylpyrimidine,** 4-mono- and 4:5-di-amino- (TRAUBE), A., i, 54.
- 2:5-Dioxy-3-phenylpurine,** 7-amino-, and its salts (FOURNEAU), A., i, 238.
- 2:6-Dioxy-1:4:4-trimethylpiperidine,** 3:5-dicyano-, and its silver salts and dibromo- (GUARESCHI), A., i, 341.
- Dicyclopentane,** derivatives of (PERKIN and THORPE), T., 729; P., 1900, 149; 1901, 110.
- Diphenacyls,**  $\alpha$ - and  $\beta$ -bromo-, and their compounds with acid chlorides (PAAL and STERN), A., i, 476.
- Diphenol.** See Dihydroxydiphenyl.
- Diphenoxy-isopropyl chloride** and -isopropylphosphorous acid (BOYD), T., 1223; P., 1901, 188.
- Diphenyl,** chloro- and nitro-derivatives of (ÜLLMANN and BIELECKI), A., i, 586. *disulphide*, and its chloronitro- and bromonitro-derivatives (BLANKSMA), A., i, 461. *tri- and tetra-sulphides,* *di-o-nitro-*, formation of (BLANKSMA), A., i, 264, 462. *sulphoxide,* 1:1'-*dinitro-* (DE BRUYN and BLANKSMA), A., i, 460.
- Diphenylacetonesemicarbazone** (WEDEKIND), A., i, 499.
- Diphenyl-acetylacetoguanamine** and -formoguanamine (CRAMER), A., i, 772.
- Diphenylamine,** 2:4'-diamino-, dihydrochloride of (KEHRMANN and ÖTT), A., i, 767.

- Diphenylamine**, 5-chloro-2-amino-, hydrochloride of (KEHRMANN and HIBY), A., i, 418.  
 3-chloro-6:4'-diamino- (KEHRMANN and KRAZLER), A., i, 420.  
*p*-nitro-, and its benzoyl derivative, electrolytic reduction of (ROHDE), A., i, 136.  
 2:2'- and 2:3'-nitroamino-, and 2:3'-diamino- (KEHRMANN and STEINER), A., i, 754.
- Diphenylamine-6-mono- and -6:6'-dicarboxylic acids**, 2:4-dinitro-, and their salts and acetyl and benzoyl derivatives (COHN), A., i, 642.
- Diphenylamine-3'-sulphonic acid**, 4:4'-diamino- (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 766.
- 1:3-Diphenyl-2-amyl-4:2- $\beta$ -naphthaisooxazine** (BETTI), A., i, 754.
- Diphenylazines** from 3:4:6-triaminoanisole (MELDOLA and EYRE), T., 1076; P., 1901, 131, 185.
- 3:3'-Diphenylbenzidine** and its salts and acetyl derivatives (FRIEBEL and RAS-SOW), A., i, 575.
- $\alpha\beta$ -Diphenyl- $\gamma$ -benzylhydroxyamidine** and its salts and ethers (LEY), A., i, 759.
- 1:3-Diphenyl-2-benzyl-4:2- $\beta$ -naphthaisooxazine** and its acetyl derivative (BETTI), A., i, 754.
- 1:3(or 5)-Diphenyl-5(or 3)-benzylpyrazole** (BÜLOW and GROTHOWSKY), A., i, 475.
- Diphenyl-borobromide and -boric acid** (MICHAELIS and RICHTER), A., i, 355.
- $\alpha\delta$ -Diphenyl- $\alpha\gamma$ -butadiene**, *di-p*-amino- and *di-p*-nitro- $\alpha$ -cyano- (FREUND), A., i, 711.
- s-Diphenylcarbamide**, bromo- and chloro-derivatives of (CHATTAWAY and ORTON), A., i, 381, 382.
- Diphenylcarbazine**, action of "saccharin" on (DÉFOURNEL), A., i, 487.  
 acid and alcoholic compounds of (CAZENEUVE), A., i, 292.  
 hydrochloride (CAZENEUVE), A., i, 655.  
 violet colouring matters from the action of chromic acid on (CAZENEUVE), A., i, 655.  
 use of, for detecting chromic acid in cotton dyed with chrome yellow (CAZENEUVE), A., ii, 626.
- 2:5-Diphenylcarbazine-1-carboxylic acid**, ethyl ester (BUSCH), A., i, 489.
- Diphenylcarbodiiazide** and its *dibromide* (CAZENEUVE), A., i, 297.
- Diphenylcarboxylic acid**, 4-amino- (DIELS), A., i, 522.
- Diphenyldiisobutylpiperazine** and its *p*-nitroso- and glyoxaline derivatives (EIBNER and PURUCKER), A., i, 168.
- Diphenyl-4:4'dicarboxylic acids**, 2:2'-*di*- and 2:2':6:6'-*tetra*-nitro-, methyl esters (ULLMANN and BIELECKI), A., i, 586.
- $\alpha\beta$ -Diphenyl- $\alpha$ -diethylthioethane- $\beta$ -one** (POSNER), A., i, 15.
- Diphenyldiguanide** and its salts and dibenzoyl derivative (CRAMER), A., i, 772.
- Diphenyldihydrazonocycanoacetic acid** and its ethyl ester and salts (LAX), A., i, 231.
- 1:2-Diphenyl-1:2-dihydroxycyclopentane** and *ae*-Diphenyl-*ae*-dihydroxypentane (JAPP and MICHE), T., 1010; P., 1901, 173.
- Diphenyldisazo- $\alpha$ -naphthol** and the action of "Michler's hydrol" on (MÖHLAU and KEGEL), A., i, 57.
- Diphenylene oxide** and its sulphonic acid (KRAEMER and WEISSGERBER), A., i, 535.
- s-Diphenylethane**, 4:4'-*dicyano*-, and 4:4'-dicarboxylic acid (KATTWINKEL and WOLFFENSTEIN), A., i, 594.
- s-Diphenylethylene**. See Stilbene.
- Diphenylethylenediamine**, action of phenylcarbimide on (SENIER and GOODWIN), T., 259; P., 1900, 228.
- 1:3-Diphenyl-2-ethyl-4:2- $\beta$ -naphthaisooxazine** (BETTI), A., i, 754.
- Diphenylfluorindine**, chloro- and nitro-derivatives, and the hydrochlorides of the chloro-compounds (KEHRMANN and GUGGENHEIM), A., i, 422.
- Diphenylglycollic acid**. See Benzoic acid.
- s-Diphenylglycollohydrazide** (CURTIUS and MÜLLER), A., i, 779.
- 2:4-Diphenylglyoxaline** and its salts (KUNCKELL), A., i, 293.  
 and its 1-phenacyl and 1-ethyl derivatives and their ethiodides, and phenacyl bromide (KUNCKELL and DONATH), A., i, 567.
- 1:2-Diphenyl-3- $\beta$ -hydroxy-, -methoxy-, and -ethoxy-propylhydrazimethylene** (RASSOW and LUMMERZHEIM), A., i, 777.
- Diphenyldiiminotetrahydro-1:2:4-thiadiazole**, bromo-, and its hydrobromide (HUGENSHOFF), A., i, 758.
- Diphenylmethane-3:3'-dicarboxylic acid**, 4:4'-diamino-, methyl esters and the dihydrochloride and diacyl derivatives of the dimethyl ester (MEHNER), A., i, 470.
- Diphenylmethanephosphine** derivatives (MICHAELIS and GÜSEWELL), A., i, 300.



- Diphenylmethylisobiuret** and its hydrochloride (McKEE), A., i, 756.
- Diphenylmethyleneanilide** (MACKENZIE), T., 1212; P., 1901, 150.
- $\alpha$ -Diphenyl- $\alpha$ -methylethylisobiuret** (McKEE), A., i, 757.
- 2:4-Diphenyl-5-methylglyoxaline** and its hydrochloride (KUNCKELL), A., i, 294.
- 1:2-Diphenyl-3-methylhydrazimethylene** (RASSOW and LUMMERZHEIM), A., i, 777.
- 1:3-Diphenyl-2-methyl-4:2- $\beta$ -naphthaisooxazine** (BETTI), A., i, 754.
- 1:3-Diphenyl-4-methylisotriazole** and *p*-bromo-, *p*-iodo-, and *di*- and *tetra*-nitro-derivatives (PONZIO and ROSSI), A., i, 169; (PONZIO), A., i, 170.
- $\alpha\beta$ -Diphenyl- $\beta$ -methylpropane** (BODROUX), A., i, 523.
- 3:5-Diphenyl-4-methylpyrazole** (ABELL), T., 931; P., 1901, 128.
- 1:3-Diphenyl-2-methyltrimethylene glycol** and its diacetyl derivative (ABELL), T., 930; P., 1901, 128.
- 1:3-Diphenyl-4:2- $\beta$ -naphthaisooxazine** (BETTI), A., i, 612.
- Diphenylnaphthaphenosafrafranine** (5:9-dianilino-7-phenylnaphthaphenazonium) and its chloride (KEHRMANN and HIBY), A., i, 419.
- s*-Diphenyl-*p*-nitrobenzenylamidine** (SACHS and BRY), A., i, 230.
- s*-Diphenyldinitroethane**. See Stilbene dinitrite.
- $\alpha\beta$ -Diphenyl- $\alpha\gamma\eta$ -octatetrene** (FICHTER and HIRSCH), A., i, 594.
- 1:2-Diphenylcyclopentane**, oxidation of (JAPP and MICHIE), T., 1023; P., 1901, 173.
- 3:5-Diphenylisocyclopentenine** (BOEDTKER), A., i, 684.
- Diphenylcyclopentenolone**. See Anhydracetonebenzil.
- Diphenyl-*p*-phenylenediamine**, *tetra*-nitro- (BANDROWSKI), A., i, 21.
- Diphenylphenylenemethane** (NORRIS), A., i, 198.
- See also Triphenylmethyl.
- Diphenylphosphine** derivatives (MICHAELIS and BUSS), A., i, 301.
- 2:6-Diphenylpiperidines**, isomeric, and their salts (SCHOLTZ), A., i, 483.
- Diphenylpiperidylethenylamidine** and its hydrochloride, picrate, and platinumchloride (KUHN), A., i, 42.
- 3:6-Diphenylpyridazine** and its **4:5-dicarboxylic acid** and its salts and ethyl ester (PAAL and SCHULZE), A., i, 148, 154.
- 2:5-Diphenylpyrrole**, 3-nitroso- and its phenylcarbimide (ANGELICO and CALVELLO), A., i, 747.
- 2:4-Diphenylsemicarbazide-1-carboxylic acid**, ethyl ester (BUSCH and HEINRICHS), A., i, 617.
- 2:4-Diphenylsemicarbazide-1-dithio carboxylic acid**, methyl ester (BUSCH and WOLPERT), A., i, 234.
- Diphenylsemithiocarbazides**, isomeric, and their reactions (BUSCH and HOLZMANN), A., i, 234.
- Diphenylsilicone** (KIPPING and LLOYD), T., 455; P., 1901, 32.
- Diphenylsulphone** and its **4-carboxylic acid**, amino- and nitro-derivatives of (ULLMANN and PASDERMAJIAN), A., i, 383.
- Diphenylsulphonebisdiazo-diphenyl and -ditolyl** and their *di*bromo-derivatives (TROGER and EWERS), A., i, 172.
- $\beta$ -Diphenylsulphone- $\alpha$ -methyl- and - $\alpha$ -ethyl-butyrac acids**, ethyl esters (POSNER and CLAUDIUS), A., i, 705.
- $\gamma$ -Diphenylsulphonevaleric acid** and its ethyl ester (POSNER and DEINHARDT), A., i, 704.
- Diphenyltetramethylenedinitrile**, *di*-thio- (WENZEL), A., i, 403.
- 2:4-Diphenylthio-carbazide- and -semicarbazide-1-carboxylic acids**, ethyl esters (BUSCH and GROHMANN), A., i, 616.
- Diphenylthiodiazoloneanil** (BUSCH and HOLZMANN), A., i, 235.
- c:b*-Diphenyl- $\alpha$ -thiol- and -thion-semicarbazidic esters** (WHEELER and DUSIIN), A., i, 26.
- 1:4-Diphenyl-5-thio-1:2:4-triazolone-3-thiol**, -3-sulphonic acid, -hydrothiamine and disulphide (BUSCH and WOLPERT), A., i, 233.
- Diphenyl-*m*-toluidine** (HAEUSSERMANN), A., i, 229.
- Diphenyl-*p*-tolylacetic acid** and its silver salt (BISTRZYCKI and WEHRBEIN), A., i, 712.
- 1:3-Diphenyl-2-*p*-tolyl-4:2- $\beta$ -naphthaisooxazine** (BETTI), A., i, 753.
- 1:4-Diphenyl-1:2:4-triazolone-3-thiol**, -3-thiomethane, -thioaminobenzene, -thioethylaminobenzene, and disulphide (BUSCH and WOLPERT), A., i, 233.
- Diphenylurazine**, constitution of (BUSCH), A., i, 488.
- 1:4-Diphenylurazole**, 5-thio- (BUSCH and GROHMANN), A., i, 616.
- 2:4-Diphenylurazole** and its salts, acetyl derivative and methyl ether (BUSCH and HEINRICHS), A., i, 617.
- $\beta\delta$ -Diphenylvalerolactoneacetic acid** (STOBBE and RUSSWURM), A., i, 147.
- Diphenyl-*o*-xylylenemethylenediamine** (SCHOLTZ and JAROSS), A., i, 486.

- Diperphthalic acid** and its sodium salt (V. BAAYER and VILLIGER), A., i, 326.
- Diisopropenyl.** See Hexinene.
- Dipropionyl.** See Diethyl diketone.
- Dipropylamine**, specific heat and latent heat of evaporation of (KAHLENBERG), A., ii, 492.
- Dipropyl diketone**, and its dioxime (PONZIO), A., i, 452.
- Dipropylene oxide** mercuric bromide (SAND), A., i, 682.  
mercuric iodide (SAND), A., i, 458.
- Di-*n*- and -*iso*-propylformal**, heat of combustion and of formation of (DELFPINE), A., ii, 6.
- Dipropoxydiphenylmethane** (MACKENZIE), T., 1206; P., 1901, 150.
- Di-*p*-propoxyphenylcarbamide** (SPIEGEL and SABBATH), A., i, 534.
- Dipropylsulphamic acid** and chloride (MAMLOCK and WOLFFENSTEIN), A., i, 673.
- Dipyromucyltartaric acid**, methyl and ethyl esters, preparation and rotation of (FRANKLAND and ASTON), T., 518; P., 1901, 41.
- Disaccharides**, synthesis of (FISCHER and ARMSTRONG), A., i, 189.
- Disalicylide** (EINHORN and PFEIFFER), A., i, 712.
- Dispersion.** See Photochemistry.
- Dissociated groups**, formation and breaking down of complex, and change of position of free affinity in (LAPWORTH), T., 1266; P., 1901, 93.
- Dissociation**, phenomenon of (BONNEFOI), A., ii, 653.  
studies in (BANCROFT), A., ii, 307.  
between univalent groups as an explanation of isomeric change and interaction (LAPWORTH), T., 1265; P., 1901, 93.  
of gaseous compounds and Gay-Lussac's law (PONSOT), A., ii, 542.  
and dissociation equilibrium in highly dissociated electrolytes (JAHN), A., ii, 491, 592.  
of electrolytes (HENSEN), A., ii, 540.  
of strong electrolytes (SACKUR), A., ii, 591.  
calculation of degree of, of strong electrolytes (ARRHENIUS), A., ii, 144, 435; (SAND), A., ii, 303; (NERNST), A., ii, 647.  
relation between the degree of, and the dissociation constant of an electrolyte in presence of other electrolytes (OSAKA), A., ii, 371.  
degree of, in mixed potassium chloride and nitrate solution (SACKUR), A., ii, 636.
- Dissociation** in dilute solutions (TARUGI and BOMBARDINI), A., ii, 89.  
of the alkyl haloids, nitrates, and sulphates (NEF), A., i, 626.  
of the compound  $Al_2Cl_6 \cdot 18NH_3$  (BAUD), A., ii, 303.  
of antimony pentachloride (NOTHOMB), A., ii, 88.  
of copper-ammonia sulphate, influence of temperature on the (DAWSON and MCCRAE), T., 1072; P., 1901, 178.  
of polyhaloid salts in aqueous solution (DAWSON), T., 238; P., 1900, 215.  
of the sulphur molecule,  $S_8$  (BILTZ), A., ii, 649.
- Dissociation constant** of silver oxide (LEVI), A., ii, 654.  
of  $\alpha$ -alkyl substitution derivatives of adipic, glutaric, and pimelic acids (MELLOR), T., 128; P., 1900, 215.
- Dissociation media** and inorganic solvents (WALDEN), A., ii, 11; (TOLLOZKO), A., ii, 437.
- Dissociation pressures** and temperatures of compounds of aromatic amines with metallic salts (TOMBECK), A., i, 164.
- Disthene**, constitution of (ZULKOWSKI), A., ii, 169.
- Disulphones** (POSNER), A., i, 14, 88, 474, 703.
- Ditelluro-anisyl** trisulphide and -phenetyl tri- and penta-sulphides (ROHRBAECH), A., i, 273.
- Di-*o*- and -*p*-toluenethiolsulphonic acids**, diazoaryl esters (TRÖGER and EWERS), A., i, 172.
- 5:9-Di-*p*-toluidino-7-*p*-tolyl-naphtha-phenazonium** chloride (KEHRMANN and KRAZLER), A., i, 420.
- Di-*o*-tolylacetylacetoguanamine** (CRAMER), A., i, 772.
- p*-Ditolylboric anhydride** (MICHAELIS and RICHTER), A., i, 356.
- Di-*o*- and -*p*-tolylcarbamides**, formation of (DIXON), T., 102; P., 1900, 208.
- Di-*o*- and -*p*-tolyl-diguanides** and their salts and -formoguanamine (CRAMER), A., i, 772.
- Di-*o*-tolyl-dihydrazonecyanoacetic acid**, ethyl ester and sodium salt (LAX), A., i, 231.
- Di-*p*-tolyl-disulphone** (V. MEYER, NACKE, and GMEINER), A., i, 264.
- Di-*m*-tolylethylenecarbamide** and **Di-*o*-tolylethylene-dicarbamide** chloride and -diurethane (SCHOLTZ and JAROSS), A., i, 487.
- Ditolylethylenediamines**, *o*-, *m*- and *p*-, action of phenylcarbimide on (SENIER and GOODWIN), T., 259; P., 1900, 228.

- Di-*p*-tolynaphthaphenosafraanine** and its chloride (KEHRMANN and HIBY), A., i, 419.
- Di-*p*-tolyl-oxy-*iso*propyl chloride** and *iso*-propylphosphorous acid (BOYD), T., 1226; P., 1901, 189.
- p*-Ditolylphosphine** derivatives (MICHAELIS and SOCHTIG), A., i, 301.
- Di-*o*- and -*p*-tolylsulphonobisdiazo-diphenyl** and **-ditolyl** (TROGER and EWEES), A., i, 172.
- Di-*p*-tolylsulphonohydroxylamine** and its benzoyl derivative (v. MEYER, NACKE, and GMEINER), A., i, 264.
- Di-*p*-tolylsulphonomethylamine** (v. MEYER, NACKE, and GMEINER), A., i, 264.
- 1.3-Di-*m*- and -*p*-tolyltetrahydroglyoxalines** and the 2-methyl derivative of the *m*-compound (SCHOLTZ and JAROSS), A., i, 486.
- Ditolylthiophosphine** derivatives (MICHAELIS and SCHONHERR), A., i, 302.
- Di-*p*-tolyl-*o*-xylylene-diamine** and **methylenediamine** (SCHOLTZ and JAROSS), A., i, 486.
- Di-2:4:5-trimethylbenzylamine** and its salts and nitrosoamine (CURTIUS and FRANZEN), A., i, 293.
- Di-2:4:5-trimethylbenzylhydrazine** and its hydrochloride (CURTIUS and FRANZEN), A., i, 293.
- Ditriphenylsiliclyl ether** (KIPPING and LLOYD), T., 455; P., 1901, 32.
- Diundecenylthiocarbamide** (KRAFFT and TRITSCHLER), A., i, 115.
- s-Diisovalerylhydrazide** (AUTENRIEHI and SPIESS), A., i, 230.
- Di-1:2:4-xylyl-diguanide** and **-dithiocarbamide** (CRAMER), A., i, 772.
- Dixyl-ethylenediamine** and **-piperazine** (SCHOLTZ and JAROSS), A., i, 486.
- Dixyl-ethylenediamine** and its nitrate, mercurichloride and platinichloride, and its nitro-derivatives, and the action of phenylcarbimide on (SENIER and GOODWIN), T., 254; P., 1900, 228.
- Dixylpiperazine** (SENIER and GOODWIN), T., 256; P., 1900, 228.
- Dodecanaphthene**, chloro- (MABERY and SIEPLEIN), A., i, 306.
- n-Dodecoic anhydride** (*n-lauric anhydride*) (KRAFFT and ROSINY), A., i, 113.
- Dodecyl alcohol** (*methyl-diisooamylcarb-inol*) (GRIGNARD), A., i, 250, 680.
- Dogs.** See Agricultural Chemistry.
- Dog-wood**, Jamaica, constituents of (FREER and CLOVER), A., ii, 333.
- Dolomite** from Ceylon (SCHIFFER), A., ii, 110.  
from Magdeburg (FAHRENHORST), A., ii, 248.
- Dolomites** from Iowa (KNIGHT), A., ii, 398.
- Domeykite** from Lake Superior (KOENIG), A., ii, 109.
- Drainage water.** See Agricultural Chemistry.
- Dressings, surgical**, value of alcohols in (BUCHNER, FUCHS, and MEGELE), A., ii, 562.  
impregnation and analysis of (UTZ), A., ii, 131.  
analysis of (FRERICHS), A., ii, 203.  
estimation of bismuth in, volumetrically (FRERICHS), A., ii, 201.  
estimation of iodoform in (FRERICHS), A., ii, 42, 204.  
estimation of mercuric chloride in (FRERICHS), A., ii, 204; (UTZ), A., ii, 348.  
estimation of phenol when mixed with resinous substances in (THRESH), A., ii, 698.  
estimation of phenol, salicylic acid and salol in (TELLE), A., ii, 698.
- Drugs**, influence of, on hepatic metabolism (NOËL PATON and EASON), A., ii, 253.  
estimation of alkaloids in (GORDIN), A., ii, 485.
- "Dulcin"** (*phenetolecarbamide*), detection and estimation of, in articles of food (BELLIER), A., ii, 50.
- Dunite** from Koswinsky-Kamen, Urals (DUPARC and PEARCE), A., ii, 664.
- Durene**, bromination and iodination of (EDINGER and GOLDBERG), A., i, 23.
- Dust**, mineral constituents of (HARTLEY and RAMAGE), A., ii, 399.
- Dynpnone**, sulphonal derivatives of (POSNER), A., i, 474.
- Dyeing**, theories of (SISLEY), A., i, 99.

# E.

- Earthnut meal.** See Agricultural Chemistry.
- Earths, rare**, radio-active (HOFMANN and STRAUSS), A., ii, 19.  
luminescence spectra of (BAUR and MARC), A., ii, 634.  
error of the sulphate method for the determination of the equivalents of the (BRAUNER and PAVLIČEK), P., 1901, 63.  
combination of hydrogen and of nitrogen with metals of the (MATIGNON), A., ii, 60, 61.  
salts of the (KRAUS), A., ii, 453.

**Earths, rare**, salts of the, isomorphism between the, and bismuth salts (BODMAN), A., ii, 454.

See also Cerite metals.

**Egonic acid** (WILLSTÄTTER and BODE), A., i, 291.

*r*-**Egonic acid**, synthesis of (WILLSTÄTTER and HOLLANDER), A., i, 561.

*i*-**Egonine** and its salts (WILLSTÄTTER and BODE), A., i, 483.

**Echinoderms**, digestion and metabolism in (COHNHEIM), A., ii, 668.

**Echinopsine** and its salts,  $\beta$ -**Echinopsine**, **Echinopseine**, and **Echinopsfluorescin** (GRESHOFF), A., i, 338.

**Edestan** (OSBORNE), A., i, 781.

**Edestin**, behaviour of, to acid and alkali (OSBORNE), A., i, 781.

decomposition products of (LEVENE and MENDEL) A., i, 656.

**Egg-albumin**. See Albumin.

**Eggs, frogs'**, action of isotonic solutions of chlorides and sugar on (RONDEAU-LUZEAU), A., ii, 400; (BATAILLON), A., ii, 401.

hens', iron in (HOFFMANN), A., ii, 608. unfertilised, division of (MATHEWS), A., ii, 28.

**Elaidamine** and its salts and benzoyl derivative (KRAFFT and TRITSCHLER), A., i, 116.

**Elaidic chloride**, amide, and nitrile (KRAFFT and TRITSCHLER), A., i, 116.

**Elasmobranchs**, gastric digestion in (WEINLAND), A., ii, 252, 458.

**Elder tree bark**, constituents of (MALMÉJAC), A., ii, 572.

#### ELECTROCHEMISTRY:—

**Accumulator**, theory of the (ABEL), A., ii, 537.

**Accumulators**, lead, gaseous polarisation in (REED), A., ii, 218.

**Cell, chlorine-hydrogen gas** (AKUNOFF), A., ii, 81; (MÜLLER), A., ii, 537. concentration, E.M.F. of (LEHFELDT), A., ii, 4, 433; (KAHLENBERG), A., ii, 81; (ARRHENIUS), A., ii, 144; (JAHN), A., ii, 299; (SAND), A., ii, 303; (NERNST), A., ii, 370; (SACKUR), A., ii, 591.

Daniell, pyrogenic (SUCHY), A., ii, 369.

galvanic, theory of, and its connection with autoxidation (HABER), A., ii, 299.

gold | sulphuric acid, E.M.F. of (BOSE and KOCHAN), A., ii, 590.

Grove, E.M.F. of (BOSE), A., ii, 589.

Kohrausch-Ostwald conductivity, modified form of (CUSHMAN), A., ii, 596.

#### ELECTROCHEMISTRY:—

**Cell**, magnesium | sodium or potassium hydroxide, behaviour of magnesium in (CAMPETTI), A., ii, 590.

oxygen-hydrogen, E.M.F. of (WILSMORE), A., ii, 2.

influence of platinum catalysis on (HÖBER), A., ii, 151.

standard, researches on (JAEGER and LINDECK), A., ii, 368.

Weston cadmium (COHEN), A., ii, 142.

behaviour of (JAEGER and LINDECK; WIND), A., ii, 368.

with a depolariser which is spontaneously regenerated by direct reoxidation by the air (ROSSET), A., ii, 434.

**Conductivity** of air and salt vapour (WILSON), A., ii, 490.

of aqueous solutions of double salts (LINDSAY), A., ii, 143; (JONES and CALDWELL), A., ii, 375.

change of, with temperature up to and above the critical temperature in solutions of salts in liquid sulphur dioxide (HAGENBACH), A., ii, 434.

of dilute solutions of salts which are hydrolytically dissociated in aqueous solutions (SALVADORI), A., ii, 4.

of some metals and non-metals (JAEGER and DIESSELHORST; RIETZSCH), A., ii, 84.

of aqueous solutions of alkali chlorides and nitrates (KOHLEBAUSCH and MALBY), A., ii, 82.

of solutions of alkali iodates, and a formula for calculating the conductivity (KOHLEBAUSCH), A., ii, 221.

of solutions of potassium chloride, hydrogen chloride, and potassium hydroxide, influence of cane sugar on (MARTIN and MASSON), T., 707; P., 1901, 91.

of solutions of stannous chloride and hydrochloric acid (YOUNG), A., ii, 318.

of cobalt and platinum bases (WERNER and HERRY), A., ii, 638.

of electrolytes, influence of non-electrolytes on the (HANTZSCH), A., ii, 54.

in gases by the motion of negatively charged ions (TOWNSEND), A., ii, 221; (TOWNSEND and KIRKBY), A., ii, 434.

in gases and vapours (HAGENBACH), A., ii, 434.

## ELECTROCHEMISTRY :—

- Conductivity** in gases exposed to the action of cathode rays (MCLENNAN), A., ii, 490.  
 of the sodium salt of methyl  $\alpha$ -cyano- $\beta$ -hydroxyacrylate (DE BOLLE-MONT), A., i, 117.
- Current**, apparatus for alternating a direct (HOLROYD), T., 1330.  
 pyrogenetic reactions induced by the (LÖB), A., ii, 371.  
 of high frequency, action of, on the secretion of urine (DENOYÉS, MARTRE, and ROUVIÈRE), A., ii, 564, 611.
- Dielectric constant** of some gases and vapours, and its dependence on temperature (BÄDEKER), A., ii, 220.  
 of pure liquids (TURNER), A., ii, 53.  
 of nitriles (SCHLUNDT), A., ii, 299.  
 determination of the, of substances of the pyridine and piperidine series (LADENBURG), A., ii, 634.
- Electro-affinity** of the metals (DAWSON and McCRAE), A., ii, 222.
- Electrocapillary** action of non-dissociated molecules (GOUY), A., ii, 592.  
 phenomena (PALMAER), A., ii, 370.  
 properties of mixtures, and electrocapillary viscosity (GOUY), A., ii, 83, 435.
- Electromagnetic theory**, Poynting's theorem relating to (WEDELL-WEDELLSBORG), A., ii, 82.
- Electric discharge**, silent, chemical actions caused by the (BERTHELOT), A., ii, 2.  
 action of, on sulphur perfluoride (BERTHELOT), A., ii, 15.
- Electrical arrangements** in the chemical laboratory of the Mining School at Clausthal (KUSTER), A., ii, 217.
- Electric conductors**, soap solutions as (SMITS), A., ii, 12.
- Electrical effects** caused by liquid hydrogen (DEWAR), A., ii, 598.
- Electric furnace**, improved, for laboratory use (TUCKER and MOODY), A., ii, 596.  
 for the preparation of alloys (HAMILTON and SMITH), A., ii, 385.
- Electric spark**, use of, for the analysis of gases (BERTHELOT), A., ii, 685.
- Electrical properties** of chromium during dissolution in acids (BRAUER), A., ii, 635.
- Electrochemical** behaviour of acetylene (COEHN), A., ii, 539.

## ELECTROCHEMISTRY :—

- Electrochemical** behaviour of nickel ammonium sulphate (PFANHAUSER), A., ii, 538.  
 reduction (HABER), A., ii, 638.  
 relations between the allotropic modifications of metals (BERTHELOT), A., ii, 301.  
 studies of the solubility of precipitates containing heavy metals (IMMERWAHR), A., ii, 301.
- Electrode potentials** (WILSMORE; OSTWALD), A., ii, 2; (WILSMORE and OSTWALD), A., ii, 142.
- Electrodes**, concentration at the, in a solution (SAND), A., ii, 82.  
 drop, theory of the (BERNSTEIN), A., ii, 636.  
 gas, equilibria at (BOSE), A., ii, 635.  
 hydrogen and calomel, comparison of (WILSMORE; OSTWALD), A., ii, 2; (WILSMORE and OSTWALD), A., ii, 142.  
 new, sensitive to light (BOSE and KOCHAN), A., ii, 590.
- Electrolysis**, production of active oxygen by (BOEHRINGER & SONS), A., ii, 649.  
 of fused salts (LORENZ), A., ii, 538.  
 of salts in organic solvents (SPERANSKY and GOLDBERG), A., ii, 157.  
 of fused alkali chlorides (FISCHER), A., ii, 96.  
 of ammonium oxalate, formation of carbon during the (VERWER), A., ii, 693.  
 of calcium chloride (TUCKER and MOODY), A., ii, 98.  
 of solutions of carboxy- and oxy-haemoglobin (GAMGEE), A., i, 782.  
 of a mixture of copper sulphate and sulphuric acid (SAND), A., ii, 82.  
 of hydrochloric acid (MELLOR), T., 219; P., 1900, 221.  
 of hydroxy-acids (HAMONET), A., i, 187.  
 of molten lead iodide and of lead chloride (AUERBACH), A., ii, 590.  
 of phenol in presence of hydrogen haloids (ZEHLANT), A., i, 382.  
 of uranium nitrate (OECHSNER DE CONINCK and CAMO), A., ii, 556.  
 of uric acid and its methylated derivatives (TAFEL), A., i, 236, 237.
- Electrolytes**, strong, behaviour of (SACKUR), A., ii, 636.  
 strong, applicability of the law of mass action to (V. STEINWEHR), A., ii, 539.

**ELECTROCHEMISTRY:—**

- Electrolytes**, freezing point depressions for aqueous solutions of (MACGREGOR), A., ii, 223.  
 diagram of freezing point depressions for (MACGREGOR), A., ii, 8.  
 electrometric method to determine the presence of, whose ions are transported at different speeds (OKER-BLOM), A., ii, 541.  
 dissociation of (HENSGEN), A., ii, 540; (SACKUR), A., ii, 591.  
 calculation of degree of dissociation of strong (ARRHENIUS), A., ii, 144, 435; (SAND), A., ii, 303; (NERNST), A., ii, 647.  
 highly dissociated, degree of dissociation and dissociation equilibrium in (JAHN), A., ii, 491, 592.  
 relation between the dissociation constant and the degree of dissociation of an, in presence of other electrolytes (ŌSAKA), A., ii, 371.  
 solid and fused, decomposition potentials of (GARRARD), A., ii, 54.  
 toxic action of, on fishes (KAHLENBERG and MEHL), A., ii, 327.  
 amphoteric (WINKELBLECH), A., ii, 370.  
**Non-electrolytes**, freezing point of aqueous solutions of (LOOMIS), A., ii, 492.  
 influence of, on the conductivity of electrolytes (HANTZSCH), A., ii, 54.  
 influence of, on the hydrolysis of ethyl acetate (KULLGREN), A., ii, 496.  
**Electrolytic analysis**, apparatus for (MARSHALL), A., ii, 190.  
**Electrolytic dissociation**, theory of (KAHLENBERG, KOCH, and HALL), A., ii, 540.  
 lecture experiment illustrating the (NOYES and BLANCHARD), A., ii, 91.  
 of salts in aqueous solution, influence of alcohols and other organic substances on the (DIRZ), A., ii, 222.  
**Electrolytic deposition** of chromium (FÉREÉ), A., ii, 513.  
 of copper (DICKSON), A., ii, 159.  
 rate of, in presence of sulphuric acid (SIEGRIST), A., ii, 370.  
 of iron and nickel from mixed solutions of their sulphates (KÜSTER), A., ii, 555.  
 of lead (GLASER), A., ii, 158.

**ELECTROCHEMISTRY:—**

- Electrolytic formation** of alkali metals from fused alkali chlorides (FISCHER), A., ii, 96.  
 of alkali ferrates (HABER and PICK), A., ii, 103; (PICK), A., ii, 554.  
 of alkali periodates (MÜLLER), A., ii, 380.  
 of benzidine (LÖB), A., i, 487.  
 of calcium chlorate and hypochlorite (TUCKER and MOODY), A., ii, 98.  
 of ferrous ferric oxide (KAUFMANN), A., ii, 554.  
 of iodoform (ELBS and FOERSTER), A., i, 109.  
**Electrolytic oxidation** of toluene (MERZBACHER and SMITH), A., i, 134; (PULS), A., i, 318.  
 of nitrotoluenes (PIERRON), A., i, 685.  
**Electrolytic reduction** of barbituric acid (TAFEL and WEINSCHENK), A., i, 72.  
 of guanine (TAFEL and ACH), A., i, 426.  
 of methyluracil (TAFEL and WEINSCHENK), A., i, 71.  
 of nitrites (SULER), A., ii, 637.  
 of nitro-compounds (ELBS), A., i, 74; (ROHDE), A., i, 135.  
 of aromatic nitro-compounds to amines (ELBS and SILBERMANN), A., i, 459; (CHILESOTTI), A., i, 587; (BOEHRINGER & SONS), A., i, 684.  
 of *o*-nitroanthraquinone and of 1:5- and  $\alpha$ -dinitroanthraquinone (MÖLLER), A., i, 593, 646.  
 of nitrourea (HOLROYD), T., 1326; P., 1901, 197.  
 of xanthine (TAFEL and ACH), A., i, 425.  
**Electrolytic synthesis** of organic substances (ELBS and FOERSTER), A., i, 109.  
 of *n*-decanedicarboxylic acid (WALKER and LUMSDEN), T., 1199; P., 1901, 188; (KOMPPA), A., i, 365.  
**Electrolytic solution pressure** (LEHFELDT), A., ii, 4, 5; (KRÜGER), A., ii, 145.  
**Electrolytic transference** of ions, determination of the constitution of complex salts by the (RIEGER), A., ii, 638.  
**Electromotive behaviour** of compounds with several stages of oxidation (LUTHER), A., ii, 301; (ABEL), A., ii, 490; (BRAUER), A., ii, 635.

## ELECTROCHEMISTRY :—

- Electromotive force** and osmotic pressure (LEHFELDT), A., ii, 4, 5; (KRÜGER), A., ii, 145.  
 contact, and the theory of ions (ROTHÉ), A., ii, 490.  
 of electrolytic cells, influence of the addition of a salt with one similar ion on the (SACKUR), A., ii, 636.  
 of chromium (MICHELI), A., ii, 82.  
**Ohm's law**, apparatus to illustrate (MILLER and KENRICK), A., ii, 56.  
**Ions**, nomenclature of the (WALKER), A., ii, 636.  
 theory of, and contact electromotive forces (ROTHÉ), A., ii, 490.  
 theory of, in connection with auto-oxidation (HABER), A., ii, 299.  
 produced in air, diffusion of, by the action of a radio-active substance, ultra-violet light, and point discharges (TOWNSEND), A., ii, 3.  
 electro-striction of, in organic solvents (CARRARA and LEVI), A., ii, 3.  
 model illustrating the mobility and transference of (STEELE), A., ii, 540.  
 colour of (VAILLANT), A., ii, 595.  
 effect of, on the contraction of the lymph hearts of the frog (MOORE), A., ii, 257.  
**Ionic charges**, effect of the interaction of, on osmotic pressure (v. TÜRIN), A., ii, 375.  
 migration, speed of, in dilute solutions (JAHN, BERLINER, BODAN, BUKSCHNEWSKI, GOLDHABER, METEKA, OPPENHEIMER, and REDLICH), A., ii, 540.  
 model to show (MILLER and KENRICK), A., ii, 55.  
 reactions, difference between, and molecular reactions (ROHLAND), A., ii, 152.  
 velocities in aqueous solution, new method of measuring (STEELE), T., 414; P., 1901, 5.  
**Ionisation**, relation of the viscosity of mixtures of solutions of salts to their state of (BARNES), A., ii, 374.  
 of atmospheric air (WILSON), A., ii, 435.  
 of solutions of sodium hydroxide, carbonate, and hydrogen carbonate by addition of sodium chloride, repelling of the (SMITS and WOLFF), A., ii, 505.  
**Polarisation**, cathodic, studies on (MÜLLER), A., ii, 219.  
 LXXX. ii.

## ELECTROCHEMISTRY :—

- Polarisation**, gaseous, in lead accumulators (REED), A., ii, 218.  
 of magnesium in alkaline solutions (CAMPETTI), A., ii, 590.  
**Depolarisation**, cathodic, studies on (MÜLLER), A., ii, 219.  
 diminution of, by potassium chromate (MÜLLER), A., ii, 218.  
**Potential**, differences of, between metals and non-aqueous solutions of their salts (KAHLENBERG), A., ii, 81.  
 of oxidation cells, influence of benzyl alcohol on the (SCHAUM), A., ii, 300.  
**Potentials**, absolute, of the metals (WILSMORE; OSTWALD), A., ii, 2; (WILSMORE and OSTWALD), A., ii, 142.  
 decomposition, of fused salts, theory of the (LORENZ), A., ii, 142.  
**Transport numbers**, modification of method of determining, and influence of concentration on these numbers for some ternary salts (NOYES), A., ii, 143.  
**Decomposition voltages**, laboratory apparatus for (BANCROFT), A., ii, 302.  
**Amperemanometer** (JOB), A., ii, 83, 222.  
**Electrical thermostat** (YOUNG), A., ii, 491.  
**Voltameter** as an amperemeter (JOB), A., ii, 83, 222.  
 copper (ABEL), A., ii, 378.  
**Elements**, relation between atomic weight, atomic volume, and melting point of (BAYLEY), A., ii, 497.  
**Embryo**, mammalian, first appearance of aldehydase in the (JACOBY), A., ii, 670.  
**Enantiotropy** of tin (COHEN), A., ii, 106, 244.  
**Endotrypsin**, an enzyme from yeast (HAHN and GERET), A., i, 59; ii, 677; (KUTSCHER), A., ii, 466, 523.  
**Energy**, need for, during inanition (VOIT), A., ii, 254.  
 free, alteration of, during the formation of some slightly soluble metallic salts (KLEIN), A., ii, 225.  
 of non-carboxylic organic acids (COFFETTI), A., i, 29.  
**Enstatite** from Massachusetts (EMERSON), A., ii, 250.  
**Enzymes**, physiological function of, in vegetable life (SOAVE), A., ii, 267.  
 mechanism of the action of (HANRIOT), A., i, 243; ii, 175.

**Enzymes**, sensitiveness of, and their relation to protoplasm (BOKORNY), A., i, 177, 435; (KONING), A., i, 177.  
 action of chemical agents on (BOKORNY), A., i, 437.  
 influence of food on the secretion of (PORTIER and BIERRY), A., ii, 666.  
 action of, on chromatophores and dissolved dyes (KONING), A., i, 177.  
 in Actiniae (MESNIL), A., ii, 562.  
 from *Penicillium glaucum*, inversion of raffinose by an (GILLOT), A., ii, 121.  
 diffusion of, in seeds (LUMIA), A., ii, 33.  
 acting on salol in various organs (NOBÉCOURT and MERKLIN), A., ii, 324.  
 which produces mannitol (GAYON and DUBOURG), A., i, 784.  
 amyolytic, of the liver (PERMILLEUX; DASTRE), A., ii, 325.  
 soluble dehydrating, in the organism of the horse (GÉRARD), A., ii, 178.  
 endo-cellular (DASTRE), A., ii, 325.  
 fat-splitting, of the stomach (VOLHARD), A., ii, 518.  
 glycolytic, in muscle (BRUNTON and RHODES), A., ii, 563.  
 inorganic (BREDIG and IKEDA), A., ii, 441; (BREDIG and REINDERS), A., ii, 442.  
 organic, action of poisons on (HÖBER), A., ii, 151.  
 oxidising. See Oxydase.  
 pancreatic, immunity in relation to (DEAN), A., ii, 563.  
 proteolytic, in the organs and tissues of the body (HEDIN and ROWLAND), A., ii, 462.  
 and rennet-like, in malt (WEIS), A., ii, 69.  
 in germinated seeds (BUTKEWITSCH), A., ii, 182, 466.  
 in the spleen (HEDIN and ROWLAND), A., ii, 402.  
 of yeast (HAHN and GERET), A., i, 59; ii, 677; (KUTSCHER), A., ii, 466, 523.  
 action of, on toxins (BALDWIN and LEVENE), A., ii, 667.

**Enzymes.** See also:—

Aldehydase.  
 Bromelin.  
 Casease.  
 Catalase.  
 Diastase.  
 Endotrypsin.  
 Galactase.  
 Glucase.  
 Invertase.

**Enzymes.** See:—

Invertin.  
 Laccase.  
 Lactase.  
 Lipase.  
 Lotase.  
 Maltase.  
 Maltoglucase.  
 Myrosin.  
 Oxydases.  
 Papain.  
 Papayotin.  
 Pepsin.  
 Peptase.  
 Philothion.  
 Protease.  
 Ptyalin.  
 Pyocyanase.  
 Rennet-ferment.  
 Rennin.  
 Schinoxydase.  
 Seminase.  
 Spermase.  
 Sucrase.  
 Taka-diastrase.  
 Tannase.  
 Trypsin.  
 Urease.  
 Zymase.

**Epanorin** (ZOPF), A., i, 88.

**Epichlorohydrin** and **Epibromohydrin**, action of, on the sodium derivatives of benzoylacetic esters (HALLER), A., i, 538.

**Epidote** (*bucklandite*) from Ach-Matovsk, Urals (ANTIPOFF), A., ii, 607.

**Epinephrine** (ABEL), A., i, 354.  
 sulphate, intravenous injection of minimal doses of (HUNT), A., ii, 259.

**Epithelia**, transport of fluid by (REID), A., ii, 460.

**Equation** of condition and the theory of cyclic motion (VAN DER WAALS), A., ii, 644.

**Equilibrium** of mixed crystals with the vapour phase (ROOZEBOOM), A., ii, 151.

in ternary systems (SCHREINEMAKERS), A., ii, 146, 224, 305, 372, 436, 445.

in the system, acetone-phenol-water (SCHREINEMAKERS), A., ii, 445.

composition of the vapour phase of the systems aniline-water, and aniline-phenol-water (SCHREINEMAKERS), A., ii, 57.

in the system, ether-succinonitrile-water (SCHREINEMAKERS), A., ii, 641.

composition of the vapour phase in the system phenol-water, with one or two liquid phases (SCHREINEMAKERS), A., ii, 9, 57.



**Equilibrium:—**

**Vapour phase**, composition of the, of the systems aniline-water, and aniline-phenol-water (SCHREINEMAKERS), A., ii, 57.  
composition of the, in the system phenol-water, with one or two liquid phases (SCHREINEMAKERS), A., ii, 9, 57.

**Equivalent alteration** of the distribution coefficient of ammonia between chloroform and water for the alkali salts (DAWSON and McCRAE), T., 493; P., 1901, 5.  
of the distribution coefficient of ammonia between chloroform and water for the alkaline earth salts (DAWSON and McCRAE), T., 1069; P., 1901, 177.

**Equivalents** of the rare earths, error of the "sulphate method" for the determination of the (BRAUNER and PAVLIČEK), P., 1901, 63.

**Erbium**, spectrum of (BAUR and MARC), A., ii, 634.

**Erucamide** (KRAFFT and TRITSCHLER), A., i, 116.

**Erysimin** from *Erysimum aureum* (SCHLAGDENHAUFFEN and REEB), A., i, 39.

**Erythric acid**. See  $\alpha\beta\gamma$ -Trihydroxybutyric acid.

**r-Erythritol** (MAQUENNE and BERTRAND), A., i, 497.

**l-Erythritol** diacetal, preparation and thermochemical data of (DELÉPINE), A., i, 3.

diformal, thermochemical data of (DELÉPINE), A., i, 4.

**Erythritols**, active (MAQUENNE and BERTRAND), A., i, 497.

**l-Erythrose** and its phenylhydrazone, and **l-Erythronic acid** and its lactone (RUFF and MEUSSER), A., i, 449.

*Eschscholzia californica*, alkaloids of (SCHMIDT), A., i, 742; (FISCHER), A., i, 743.

**Essences**, fruit, analysis of (FABRIS), A., ii, 49.

**Ester-formation** with pyridinepolycarboxylic acids (MEYER), A., i, 750.

**Esterification**, new automatic method of (FRANKLAND and ASTON), T., 517; P., 1901, 41.

of amyl and methyl alcohols (McKENZIE), T., 1139; P., 1901, 186.  
of glycerol (BÖTTINGER), A., i, 661.

of 3-nitrophthalic acid (McKENZIE), T., 1135; P., 1901, 186.

of 3- and 4-nitrophthalic acids (WEGSCHEIDER and LIPSCHITZ), A., i, 32; (WEGSCHEIDER), A., i, 325.

**Esterification**, fractional, of stereoisomerides (MARKWALD and MCKENZIE), A., i, 229.

in plants, mechanism of (CHARABOT and HÉBERT), A., ii, 619.

**Esters**, preparation of, from other esters of the same acid (PATTERSON and DICKINSON), T., 280; P., 1901, 4.  
equilibrium between acids, alcohol, water and (EULER), A., ii, 307.

addition of, to diethyl succinate (STOBBE), A., i, 147, 276.

compounds of, with complex acids (v. BAEYER and VILLIGER), A., i, 659.

acid, of *as*-dicarboxylic acids, nomenclature of (SUDBOROUGH), P., 1901, 43.

alkyl, action of organometallic derivatives on (BÉHAL), A., i, 246; (MASSON), A., i, 249; (GRIGNARD), A., i, 250.

organic, action of sodium on (REFORMATSKY; ASTACHOFF and REFORMATSKY; PROTOPOFF and REFORMATSKY), A., i, 447.

**Estragol**, action of iodine and yellow mercuric oxide on (BOUGAULT), A., i, 383, 392.

colour reaction of (CHAPMAN), A., ii, 77.

**Ethane**, production of (BONE and JERDAN), T., 1042; P., 1901, 162.

bromine derivatives, preparation of (POURET), A., i, 305.

**Ethanedicarboxylic acids**. See:—

Methylmalonic acid (*isosuccinic acid*).  
Succinic acid.

**Ethanol-dipropylamine**, **diisobutylamine** and **diisoamylamine**. See Hydroxyethyl-dipropylamine, **diisobutylamine**, and **diisoamylamine**.

**Ethanolmercuric iodide** and its benzoyl derivative and **Ethanolquinolinium** haloids (SAND), A., i, 458.

**Ethenyl-4-methylumbelliferone**, 8-amino- (v. PECHMANN and OBENMILLER), A., i, 337.

**Ethenyl trisulphide**. See Tetraethenyl hexasulphide.

**Ether**. See Ethyl ether.

b. p. 136—146°, from  $\beta\gamma$ -dimethyl- $\beta$ -butylene dibromide and alcoholic potash (KONDAKOFF), A., i, 62.

$C_{78}H_{64}O_{36}N_2$ , from the hydrolysis of filicannic acid (REICH), A., i, 212.

**Etherification**, phenomena of (NEF), A., i, 626.

by inorganic salts (ODDO), A., i, 495.  
of triphenylcarbinols by alcohols (FISCHER), A., i, 82.

**Ethers**, action of acid chlorides on, in presence of zinc (DESCUDÉ), A., i, 357; (FREUNDLER), A., i, 445; (WEDEKIND and HAEUSSERMANN), A., i, 536.  
 mixed, decomposition of, by hydrogen haloids (MICHAEL), A., i, 625.  
 compounds of, with complex acids (v. BAEYER and VILLIGER), A., i, 659.

**Ethers.** See also :—

Acetals.  
 Amyl ethers.  
 Anethole.  
 Anisole.  
 Apigenin methyl ether.  
 Apiole.  
 Benzeneazo-*o*-nitrophenyl ethyl ether.  
 Benzene-4-azoresorcinol methyl ether.  
 Benzhydrol ether.  
 Benzoyl-*m*-tolyl methyl ether.  
 2:4-Bisbenzeneazoresorcinol methyl ether.  
 Butaldehyde diethylacetal.  
 Campheride.  
 Catechol diethyl ether.  
 Catechol methylene ether.  
 Cœrulein methyl and ethyl ethers.  
 Diisoamylformal.  
 Diamyloxydiphenylmethane.  
 Diazobenzenephloroglucinol methyl ether.  
 Dinitro-*m*-hydroxyphenyldi-bromo-*o*-quinophenylene ether.  
 Diisobutyloxydiphenylmethane.  
 Diethoxybenzylidene.  
 Diethylacetal.  
 Diethyleneanisole.  
 Diethylformal.  
 Dihydrophenanthrene oxide.  
*o*-Dihydroxycatechol ether.  
 1:5-Dihydroxy-3-methoxyxylene.  
 Diketohexamethyleneacetals.  
 2:6-Diketo-3:4:4-trimethylhexamethylene ethyl ether.  
 Dimethylmethylal.  
 1:3-Dimethoxybenzene.  
*o*-Dimethoxybenzoin methyl ether.  
 Dimethoxybenzylidene.  
 Dimethylacetal.  
 Dimethyloxydiphenylmethane.  
 Dimethylphloroglucinol benzyl and methyl ethers.  
*a*-Dinaphthylene oxide.  
 Diphenylene oxide.  
 Dipropylformals.  
 Dipropoxydiphenylmethane.  
 Dinitrophenylsilicyl ether.  
*i*-Erythritol diacetal and diformal.  
 1-Ethoxybenzene.  
 1-Ethoxydiphenyl.  
 Ethoxynaphthalenes.

**Ethers.** See :—

Ethylene glycol acetal and formal.  
 Ethyl ether.  
 Gallamino-*p*-phenetole.  
 Gallein methyl and ethyl ethers.  
 Gallin pentamethyl ether.  
 Glycerol diaryl ethers.  
 Guaiacol.  
 Guaiacol ethyl ether.  
 Hexaethoxydiphenyl.  
*m*-Hydroxyacetophenonemethyl ether.  
 2-Hydroxy-5-methylolbenzaldehyde ether.  
 5-Hydroxy- $\alpha\beta$ -naphthaphenazine ethyl ether.  
 Hydroxyquinol triethyl ether.  
*p*-Hydroxytriphenyl methyl ether.  
 Lotoflavin ethers.  
*d*-Mannitol triacetal and triformal.  
 Menthyl chloromethyl oxide.  
 Menthyl  $\beta$ -naphthyl methylene ether.  
*o*-Methoxyazobenzene.  
 1-Methoxybenzene.  
 3-Methoxy-2:6-dimethylphenetriol.  
 1-Methoxydiphenyl.  
 Methoxyethoxybenzenes.  
 4-Methoxyhydrindene.  
 13-Methoxy-10-methylphenanthrazine.  
 Methoxyphenylethenylcyclootriazane.  
*p*-Methoxystyrene.  
 8-Methoxy-2:3:5-trimethylquinoxaline.  
 4-Methyladaphnetin dimethyl ether.  
 Methyl ether.  
 3-Methyloctanone-7-al, acetal of.  
 Methylphloroglucinol methyl ethers.  
 4-Methylumbelliferone methyl ethers.  
 Morphenol methyl ether.  
*a*-Naphthol methyl and ethyl ethers.  
 Octahydrodinaphthylene oxide.  
 Orcinol ethers.  
 Phenetole.  
 Phenol ethers.  
 $\beta$ -Phenoxypropylene.  
 Phenyl *p*-tolyl ether.  
 Phloroglucinol ethers.  
 Propaldehyde diethylacetal.  
*p*- $\psi$ -Propenylanisole.  
 Propenylcatechol ethoxymethyl ether.  
 6-Propionylresorcinol ethyl ethers.  
*o*-Quinocatechol ether.  
 Quinol diphenyl ether.  
 Resorcinol diphenyl ether.  
 Resorcinol ethyl ether.  
 Safrole.  
*iso*Safrole.  
 Salicylaldehyde methyl ether.  
 Succintetramethylacetal.  
*p*-Telluroanisole.  
*p*-Tellurophenetole.  
 Tetrahydrodinaphthylene oxide.

**Ethers.** See:—

- Tetramethoxydiphenyltrichloroethane.  
Tetramethoxystillbene.  
4:4'-Tetramethyldiaminotriphenylcarbinol ethers.  
 $\beta$ -Thymoxystyrene.  
Tolueneazodibromophenylethylethers.  
Tolueneazo-*o*-nitrophenol ethyl ethers.  
Tolyl methyl ethers.  
Triazoanisoles.  
Triazopyrocatechol methylene ether.  
1:2:4-Triethoxybenzene.  
Triethoxyethylbenzene.  
2:2':2''-Trilydroxy-1:1':1''-trinaphthylmethane *es*anhydride, methyl and ethyl ethers of.  
Trimethylphloroglucinol ethyl ether.  
 $\beta$ -*m*-Xyleneoxystyrene.  
**Ethoxalylacetyl-*p*-nitrobenzamidine** (RAPPEPORT), A., i, 568.  
**Ethoxide**, barium, action of ethyl alcohol on (GUERBET), A., i, 625.  
sodium, action of, on fat (BULL), A., ii, 137.  
***m*-Ethoxyacetophenone** (v. KOSTANECKI and TAMBOR), A., i, 558.  
 **$\beta$ -Ethoxyacrylic acid**,  $\alpha$ -cyano-, esters (DE BOLLEMONT), A., i, 116.  
**Ethoxyaminoacetophenone** (*acetyl-*p*-phenetidine*) and its hydrochloride and phenylhydrazone (KUNCKELL), A., i, 214.  
**Ethoxyanilinophosphoryl chloride** (CAVEN), P., 1901, 26.  
 **$\alpha$ -Ethoxyanisylidenacetophenone** (POND and SHOFFSTALL), A., i, 36.  
***p*-Ethoxybenzaldehyde**, condensation of, with isobutaldehyde (HILDESHEIMER), A., i, 645.  
**1-Ethoxybenzene**, chloronitrocyano- (VAN HETEREN), A., i, 460.  
**Ethoxycaronic acid**, and ethyl ester, and anhydride, formation of (PERKIN and THORPE), T., 759; P., 1900, 149.  
**7-Ethoxychromone** and its **2-carboxylic acid** (v. KOSTANECKI, PAUL, and TAMBOR), A., i, 735.  
**Ethoxycoumarophenazine** (MARCHLEWSKI and SOSNOWSKI), A., i, 615.  
**7-Ethoxy-2:3-dimethylchromone** (v. KOSTANECKI and LLOYD), A., i, 735.  
**1-Ethoxydiphenyl** (HÖNIGSCHMID), A., i, 700.  
**Ethoxy-2-ethylchromones**, 6- and 7- (v. KOSTANECKI and TAMBOR), A., i, 558.  
**3'-Ethoxyflavone** (v. KOSTANECKI and TAMBOR), A., i, 558.  
**Ethoxylutidine**, chloro-, and its salts (MICHAELIS and v. AREND), A., i, 609.

- Ethoxymethyleneacetoacetic acid**, ethyl ester, action of, on cyanoacetamide (ERRERA), A., i, 43.  
**Ethoxymethyleneacyanoacetic acid**. See  $\beta$ -Ethoxyacrylic acid,  $\alpha$ -cyano-.  
**9-Ethoxy-10-methyl-7-phenylnaphthazonium iodide** (FISCHER and BRUHN), A., i, 417.  
**1-Ethoxynaphthalene** and its **4-sulphonic acid** and its salts, esters, amide, anilide and chloride, and their nitro-derivatives (WITT and SCHNEIDER), A., i, 698.  
**2-Ethoxynaphthalene**, 1-nitro-, electrolytic reduction of (ROHDE), A., i, 136.  
**1-Ethoxynaphthalenesulphonic acetic anhydride** (WITT and SCHNEIDER), A., i, 698.  
**Ethoxynaphthylidenecamphor** (HELBRONNER), A., i, 600.  
 **$\alpha$ -*p*-Ethoxyphenyl- $\beta$ - $\beta$ -dimethyl- $\alpha$ -*g*-prop-*anediol* and its diacetyl derivative** (HILDESHEIMER), A., i, 645.  
***o*-Ethoxyphenylethyl alcohol** (STOERMER and KAHLERT), A., i, 536.  
***p*-Ethoxyphenylhydrazonocycanoacetic acid**, ethyl ester (LAX), A., i, 231.  
**5-Ethoxy-2-phenylimino-3-phenyloxy-diazoline** (WHEELER and DUSTIN), A., i, 26.  
***p*-Ethoxyphenylsuccinamic acid** and its alkyl derivatives (GILBODY and SPRANKLING), P., 1900, 224.  
***p*-Ethoxyphenylsuccinimide** (*pyrantin*) and its alkyl derivatives, stability of (GILBODY and SPRANKLING), P., 1900, 224.  
**2-Ethoxy-5-isopropyl-1:4-benzoquinone**, 3:6-dibromo- (HOFFMANN), A., i, 474.  
**Ethoxy-*p*-toluidinophosphoryl chloride** (CAVEN), P., 1901, 26.  
**Ethyl *c*-acetyl and *c*-benzoyl-thio-*b*-phenyl- $\alpha$ -thioisemicarbazidate** (WHEELER and DUSTIN), A., i, 25.  
**Ethyl alcohol**, dry, preparation of (BULL), A., ii, 138.  
specific gravity of solutions of ether, water, and (BUSNIKOFF), A., i, 306.  
boiling point curve of mixtures of water and (NOYES and WARFEL), A., ii, 594.  
reaction between hydrochloric acid and (PRICE), T., 303; P., 1900, 185.  
equilibrium between acid, ester, water and (EULER), A., ii, 307.  
influence of, as solvent, on the rotation of ethyl tartrate (PATTERSON), T., 174; P., 1900, 176.  
action of, on barium ethoxide (GUERBET), A., i, 625.

- Ethyl alcohol**, action of, on metals (MALMÉJAC), A., i, 248.  
 as a stimulant of gastric secretion (RADZIKOWSKI; MARK-SCHNORF), A., ii, 401; (FROUIN and MOLINIER), A., ii, 402.  
 and proteid metabolism (ROSEMANN), A., ii, 668.  
 value of, as a source of muscular energy (CHAUVEAU), A., ii, 176.  
 production of, during the intramolecular respiration of seeds in water (GODLEWSKI and POLZENIUSZ), A., ii, 618.  
 colour reaction of (GRASSINI), A., ii, 43; (DITZ), A., ii, 223.  
 detection of, in milk (ÜHL and HENZOLD), A., ii, 425.  
 estimation of, refractometrically, in beer (LING and POPE), A., ii, 628.  
 estimation of water in, volumetrically (BULL), A., ii, 137.  
 presence and test for zinc in (ROMAN and DELLUC), A., ii, 40.
- Ethyl alcohol**,  $\beta$ -amino- (HENRY), A., i, 68.  
 nitroamino-, and its salts (FRANCHIMONT and LUBLIN), A., i, 674.
- Ethyl benzoyl carbonate** (KNOLL & Co.), A., i, 703.  
 chlorocarbonate, reactions of (WHEELER and DUSTIN), A., i, 26.  
 cinnamyl carbonate (KNOLL & Co.), A., i, 703.  
 c:b-diphenyl- $\alpha$ -thiol- and -thion-semicarbazide (WHEELER and DUSTIN), A., i, 26.
- Ethyl ether**, specific gravity of solutions of alcohol, water, and (BUSNIKOFF), A., i, 306.  
 vapour tensions of mixtures of chloroform and (KOHNSTAMM and VAN DALFSEN), A., ii, 641.  
 isochores of, from 1 to 1.85 c.c. (MACK), A., ii, 438.  
 equilibrium in the system, water, succinonitrile and (SCHREINEMAKERS), A., ii, 641.  
 action of acetic chloride on (DESCUDÉ), A., i, 357.  
 action of benzoic chloride on (WEDEKIND and HAEUSSERMANN), A., i, 536.  
 supposed compound of, with hydrogen chloride (JÜTTNER), A., ii, 595.  
 compound of, with triphenylmethyl (GOMBERG), A., i, 638.  
 mercuric and mono- and di-quinolinium iodides (SAND), A., i, 458.  
 action of, on plants (FISCHER), A., ii, 335.
- Ethyl ether**, physiological action of (WRIGHT), A., ii, 180, 408.  
 detection of alcohol in (GRASSINI), A., ii, 44.
- Ethyl ether**, diiodo-, constitution of, and action of ammonia on (SAND), A., i, 741.
- Ethyl hydroperoxide** and its salts (v. BAEYER and VILLIGER), A., i, 308.  
 iodide and dry silver oxide, action of, on benzoylacetic ester, deoxybenzoin, and benzyl cyanide (LANDER), P., 1901, 59.  
 action of, on silver nitrate (v. BIRON), A., i, 111.  
 mercaptan and sulphide, thermochemistry of (BERTHELOT), A., ii, 146.  
 action of, on quinone (TARBOURIECH), A., i, 329.  
 nitrate, preparation of and hydrolysis of, by water (v. BIRON), A., i, 111.  
 peroxide (v. BAEYER and VILLIGER), A., i, 62.  
 salicyl carbonates (KNOLL & Co.), A., i, 703.  
 hydrogen sulphate, action of heat on (RAMSAY and RUDORF), P., 1900, 177.  
 potassium and rubidium sulphates, salts of, with hydrogen fluoride (WEINLAND and KAPPELLER), A., i, 309.  
 dithiocarbonate, action of diamylamine and of dimethylamine on (WHEELER and DUSTIN), A., i, 25.  
 thiocarbonate diphenylsemicarbazone (WHEELER and DUSTIN), A., i, 26.  
 valeryl carbonate (KNOLL & Co.), A., i, 703.
- Ethyl-acetaldoxime** and -*iso*acetaldoxime, and the hydrolysis and reduction of the *iso*-compound (DUNSTAN and GOULDING), T., 636; P., 1901, 84.
- Ethylacetonedicarboxylic acid**, cyano-, ethyl ester, action of ammonia on (DERÔME), A., i, 313.
- Ethyl-acetophenoxime** and -*iso*acetophenoxime, and the hydrolysis and reduction of the *iso*-compound (DUNSTAN and GOULDING), T., 638; P., 1901, 85.
- Ethyl-acetoxime** and -*iso*acetoxime and the hydrolysis and reduction of the *iso*-compound (DUNSTAN and GOULDING), T., 633; P., 1901, 84.
- Ethylacetylacetone**, action of, on diazo-chlorides (FAVREL), A., i, 167.
- Ethylacetylene**. See Butinene.

- $\alpha$ -Ethyladipic acid** (*hexanedicarboxylic acid*), preparation and dissociation constants of (MELLOR), T., 130; P., 1900, 215.
- m*-Ethylaminobenzenesulphonic acid** and its isomeride and their salts and ***m*-Ethylaminoazobenzenesulphonic acid** (GNEHM and SCHEUTZ), A., i, 519.
- o*-Ethylaminobenzoic acid**, methyl ester (VORLANDER), A., i, 463.
- m*-Ethylaminophenol** and its phthalein (GNEHM and SCHEUTZ), A., i, 520.
- 4-Ethylaminophenyl-*u*-cyanoazo-methine-phenyl and 4'-nitro-phenyl** (SACHS and BRY), A., i, 229.
- p*-Ethylaminophenylglyoxylic acid** (BOEHRINGER & SONS), A., i, 713.
- p*-Ethylamino-*m*-tolylglyoxylic acid** (BOEHRINGER & SONS), A., i, 714.
- $\alpha$ -Ethylanthracetonebenzil** (JAPP and MELDRUM), T., 1038; P., 1901, 175.
- Ethylaniline**, compound of, with silver nitrate (TOMBECK), A., i, 135.
- Ethylanthranilic acid** (MEYER), A., i, 191.
- Ethylbenzene**,  $\alpha$ -thiocyano- (WHEELER and JOHNSON), A., i, 707.
- 8-Ethylsec. butyl-hydroxylamine** and -sulphamic acid (MAMLOCK and WOLFFENSTEIN), A., i, 673.
- Ethylisocarbamide** and its salts (McKEE), A., i, 757.
- Ethylcarbimide** (*ethyl isocyanate*), absorption spectra of (HARTLEY, DOBBIE, and LAUDER), T., 856; P., 1901, 125.
- l-Ethyleonine** and its salts (HOHENEMMER and WOLFFENSTEIN), A., i, 606.
- 8-Ethyl- $\alpha$ -dimethyl- and - $\alpha$ -diethylbutyric acids**, dithio-, ethyl esters (POSNER and EBERS), A., i, 705.
- Ethylene**, laboratory method for the preparation of (NEWTN), T., 915; P., 1901, 147.
- comparison of the solubility of acetylene and (TUCKER and MOODY), A., ii, 696.
- inhalation of (SMITH and HOSKINS), A., ii, 464.
- derivatives (HENRY), A., i, 577.
- compounds of, with mercuric haloids, constitution of (SAND), A., i, 458.
- Ethylene dibromide**, action of, on  $\psi$ -cumidine and xyldine (SENIER and GOODWIN), T., 254; P., 1900, 228.
- action of sodium ethoxide on, under pressure (MACKENZIE), T., 1221; P., 1901, 150.
- $\frac{1}{2}$  ethyl alcohol. See Trimethylene-carbinol.
- Ethylene glycol**, specific heat and latent heat of fusion of (DE FORCRAND), A., ii, 224.
- heat of vaporisation and hydration of (DE FORCRAND), A., i, 307.
- acetal and formal, thermochemical data of (DELÉPINE), A., i, 4.
- Ethylene oxide**, compound of, with ferrocyanic acid (v. BAEYER and VILLIGER), A., i, 659.
- Ethylene-*p*-diaminodiphenylglyoxylic acid** (BOEHRINGER & SONS), A., i, 714.
- Ethylenediamine** platinochloride (JÖRGENSEN), A., i, 164.
- Ethylenedicarbanilide**. See Dicarbanilindiphenylethylenediamine.
- Ethylenedicarboxylic acid**. See Fumaric acid.
- Ethylenetetra-carboxylic acid**, ethyl and methyl esters (WEDEKIND), A., i, 504.
- $\alpha$ -Ethylglutaric acid** (*pentanedicarboxylic acid*), preparation and dissociation constants of (MELLOR), T., 126; P., 1900, 215.
- Ethylcyclohexane** (SABATIER and SENDERENS), A., i, 459.
- synthesis of (SABATIER and SENDERENS), A., i, 263.
- $\gamma$ -Ethyl- $\beta$ -hexene**. See Octylene.
- Ethylhydroxyethylamine**, picrolonates of (MATTHES), A., i, 259.
- Ethyleneacetone**, bromo-, and dibromide (PAULY and v. BERG), A., i, 506.
- Ethylidened-*o*-aminodibenzoic acid**, methyl ester (MEHNER), A., i, 471.
- Ethylideneaminophenylguanidine** nitrate (PELLIZZARI and RONCAGLIOLI), A., i, 768.
- Ethylideneaniline**, Eckstein's, constitution of, and its stereoisomeride, salts, and diacetyl derivative (EIBNER), A., i, 640.
- hydrogen and sodium sulphites, and trichloro- (EIBNER), A., i, 376.
- Ethylidenebenzylamine** (HANTZSCH and SCHWAB), A., i, 380.
- Ethylidenebisacetoacetic acid**, ethyl ester, phenylhydrazone of (RABE and BILLMANN), A., i, 164.
- Ethylidenebistetronic acid** (WOLFF and SCHIMPF), A., i, 284.
- Ethylidenedianiline** hydrogen sulphite, hydrated, trichloro- (EIBNER), A., i, 377.
- z*-Ethylidenelactic acid**. See Lactic acid.
- Ethylidene-*o*-toluidine** and its isomeride, and their acetyl, benzoyl, and dinitroso-derivatives and salts (EIBNER and PELTZER), A., i, 97.

- 2-Ethyl-4-ketodihydroquinazoline** (GOTTHELF), A., i, 764.
- Ethylmalonic acid** (*propanedicarboxylic acid*), ethyl ester, action of ethyl citraconate and fumarate on (MICHAEL), A., i, 123.
- cyano-, ethyl ester (HALLER and BLANC), A., i, 261.
- Ethylmenthane** (KURSANOFF), A., i, 554.
- 1-Ethyl- $\alpha$ - and 3-Ethyl- $\beta$ -naphthiminazole** and their salts (FISCHER, FEZER, and REINDL), A., i, 413.
- Ethylxalyl-*o*-aminoacetophenone** (CAMPS), A., i, 751.
- Ethylpentanetricarboxylic acid**, ethyl ester (MELLOR), T., 132.
- p*-Ethylphenol**, *tri*- and *tetra*-bromo-, and their  $\psi$ -quinols and acetyl derivatives (ZINCKE), A., i, 204.
- p*-Ethylphenyl-acetylene** and -chloro-acetylene (KUNCKELL and KORITZKY), A., i, 75.
- $\alpha$ -Ethylipimelic acid**, preparation of (MELLOR), T., 131; P., 1900, 215.
- 2-Ethylpiperidine** and its salts, properties of (LIPP), A., i, 162.
- d*- and *l*, physical constants of (FRESE), A., i, 163.
- $\beta\beta$ -Ethylpropylglutaric acid** (*octanedicarboxylic acid*) (GUARESCHI and PEANO), A., i, 631.
- 4-Ethyl-4-propyltrimethylenedicarbonimide**, 3:5-dicyano- (GUARESCHI and BALDI), A., i, 345.
- 3-Ethylpyrazolone-1-carboxylamide** (BLAISE), A., i, 363.
- Ethyl-*p*-quinol** and -quinone, tribromo- (ZINCKE), A., i, 204.
- 1-Ethyl-2-quinolone**, nitro-derivatives of (DECKER), A., i, 654.
- 5-Ethyl-2-stilbazole**, 3'- and 4'-nitro-, and their salts (BACH), A., i, 610.
- p*-Ethylstyrene**,  $\alpha\beta$ -dichloro- (KUNCKELL and KORITZKY), A., i, 75.
- $\beta$ -Ethylsuccinic acid** (*butanedicarboxylic acid*),  $\alpha$ -cyano-, ethyl ester (JOWETT), T., 1347; P., 1901, 199.
- Ethylthiocarbanilic acid**, methyl ester, and its conversion to the thiol derivative (WHEELER and DUSTIN), A., i, 24.
- $\alpha$ -Ethyltricarballic acid**, formation of (JOWETT), T., 1343; P., 1901, 199.
- synthesis of, and its triethyl ester, salts, anhydro-acid, and  $\beta$ -cyano-derivative (JOWETT), T., 1346; P., 1901, 199.
- Ethylthiocarbimide** (*ethyl isocyanurate*), absorption spectra of (HARTLEY, DOBBIE, and LAUDER), T., 860; P., 1901, 125.
- 3-Ethylxanthine** (BOEHRINGER & SONS), A., i, 770.
- 1:3:5-Ethylxylylidine**, 2-nitroso- (FISCHER and CAMMERLOHER), A., i, 418.
- Eucalyptus oil** (SCHIMMEL & Co.), A., i, 395.
- containing 60 per cent. of geranyl acetate (SMITH), A., i, 282.
- Eugenol** and *iso*Eugenol, colour reactions of (CHAPMAN), A., ii, 76.
- Eugenoxycetic acid** (*eugenolglycollic acid*) and its salts, esters, and derivatives (CLAUSER), A., i, 388.
- Eugenoxymethacetic acid** and its ethyl ester (RUHMANN and WRAGG), T., 1186; P., 1901, 187.
- 2-*m*-Eugenoxymethyl-5-methyl- and -5-ethoxy-benziminazoles** and their salts (COHN), A., i, 353.
- Eugenyl potassium sulphate** (VERLEY), A., i, 143.
- 1-Eugenylloxymethylbenzoxazole** (COHN), A., i, 752.
- Eupittonne** (*hexamethoxyaurin*) and its derivatives (LIEBERMANN and WIEDERMANN; LIEBERMANN), A., i, 384.
- Eupittonne black** (*hexahydroxyaurin*) and its hydrochloride (LIEBERMANN and WIEDERMANN), A., i, 384.
- Europium** (DEMARÇAY), A., ii, 511.
- Eutectic curves** in systems of three substances of which two are optical antipodes (ADRIANI), A., ii, 230.
- Euxanthic acid** and anhydride, and their salts, esters, and acetyl and benzoyl derivatives (GRAEBE), A., i, 85.
- Euxenite** from Brevig, new substances in (HOFMANN and PRANDTL), A., ii, 387.
- Evernuric acid** (HESSE), A., i, 595.
- Exalgin** (*methylacetanilide*), colour reaction of, with potassium permanganate (MAAS), A., ii, 210.
- Expansion**, relation between melting point and, of metals (LÉMERAY), A., ii, 145.
- of aqueous sucrose solutions (DOMKE, HARTING, and PLATO), A., i, 189.
- Explosion** of mixtures of combustible vapours or fumes and air (KUBIERSCHKY), A., ii, 232.
- Explosives**, new (ALVISI), A., ii, 498.
- analysis of (SMITH), A., ii, 699.
- containing nitroglycerol, estimation of foreign volatile components of (DUPRÉ), A., ii, 582.
- Extraction apparatus** for solutions by means of liquids of lower specific gravity (NEUFELD), A., ii, 152.

## F.

**Fæces**, use of pepsin solution for investigating (PFEIFFER and LEMMERMANN), A., ii, 189.

detection of peptone in (FREUND), A., ii, 710.

human, estimation of carbohydrates in (STRASBURGER), A., ii, 357.

estimation of fat in (OEFELE), A., ii, 78 ; (LÜHRIG), A., ii, 208.

**Farmyard manure**. See Agricultural Chemistry.

**Fassaita** from Syria (FINCKH), A., ii, 172.

**Fat**, composition of, in the organism (HENRIQUES and HANSEN), A., ii, 405.

formation and decomposition of, in the tissues (HESTER), A., ii, 461.

determination of the specific heats of (VANDEVYVER-GRAU), A., ii, 46.

mean molecular weight of the fixed (insoluble) acids of (TORTELLI and PERGAMI), A., ii, 358.

action of sodium ethoxide on (BULL), A., ii, 137.

absorption of (PFLUGER), A., ii, 29, 562 ; (MUNK), A., ii, 176 ; (ROSENBERG), A., ii, 403.

artificially coloured, absorption of (HOFBAUER ; EXNER ; PFLÜGER), A., ii, 403.

sugar formation from (HARTOGH and SCHUMM), A., ii, 176.

combination of, with proteid (NERKING), A., i, 491.

dyes for (MICHAELIS), A., i, 489.

of human blood (ENGELHARDT), A., ii, 665.

of *Stillingia sebifera* seeds (TORTELLI and RUGGERI), A., ii, 34.

hydrolysis and decomposition of, in the soil (RUBNER), A., ii, 273.

examination of (REYCHLER), A., ii, 208.

optical examination of (MARPMANN), A., ii, 431.

analysis of (HALPHEN), A., ii, 359.

absolute iodine absorption number of (TORTELLI and RUGGERI), A., ii, 47.

determination of the saponification number of (SCHMATOLLA), A., ii, 630.

apparatus for estimating (JERWITZ ; WHEELER and HARTWELL), A., ii, 586.

amount and estimation of, in blood (BONNINGER), A., ii, 325.

apparatus for the simultaneous estimation of water and, in butter (PODA), A., ii, 482.

**Fat**, refraction and iodine number of, in butter (HOLM, KRARUP, and PETERSEN), A., ii, 291.

estimation of, in finely powdered substances, particularly in cocoa and cocoa mixtures (WELMANS), A., ii, 47.

estimation of, in cream (ECKLES), A., ii, 137 ; (DEHLHOLM), A., ii, 359.

estimation of, in fæces (OEFELE), A., ii, 78 ; (LÜHRIG), A., ii, 208.

estimation of, in fodders (JAHN), A., ii, 431.

estimation of, in milk by means of anhydrous sodium sulphate (LE COMTE), A., ii, 359.

estimation of glycerol in (BULL), A., ii, 138.

elimination and estimation of water in (DAVIS), A., ii, 629.

**Fats**. See also :—  
Butter.

Lard.

Margarine.

Milk.

**Fatty compounds**, configuration of (PETRENKO-KRITSCHENKO), A., i, 1.

combination of, with glycuronic acid (NEUBAUER), A., ii, 614.

**Fatty series**, direct nitration in the (BOUVEAULT and WAHL), A., i, 4, 5 ; (WAHL), A., i, 310, 445.

**Feeding**, forced, metabolism in (WHITE and SPRIGGS), A., ii, 28, 253.

**Felspar** from Christiania district (BROGGER), A., ii, 169.

from Point Sal, California (FAIRBANKS), A., ii, 168.

**Felspars**, glaucescence of (VIOLE), A., ii, 320.

**Fenchene** and **Fenchyl iodide** (KONDAKOFF and LUTSCHININ), A., i, 282.

**Fenchenes**, isomeric, and their reactions (WALLACH and NEUMANN), A., i, 332.

**Fenchocamphorones**, isomeric, and their reactions (WALLACH and NEUMANN), A., i, 333.

**Fencholenic acids**, isomeric, and their amides (WALLACH and v. WESTPHALEN), A., i, 332.

**Fenchone**, biological oxidation of (RIMINI), A., i, 393.

bromo- (BALBIANO), A., i, 89.

**Fenchone series**, compounds of the (WALLACH), A., i, 331.

**Fennel oil**, French bitter (SCHIMMEL & Co.), A., i, 394.

**Fermentation**, physics of (PRIOR and SCHULZE), A., ii, 262.

influence of carbon dioxide on (ORTLOFF), A., ii, 262.

of pentoses (SCHONE and TOLLENS), A., i, 367.

- Fermentation** of sugars by *Bacillus coli communis* and allied organisms (HARDEN), T., 610; P., 1901, 57; A., ii, 410, 567.
- with yeasts and sugars (LINDNER), A., ii, 182, 263.
- produced by yeasts, influence of oxygen on (IWANOWSKI and OBRASTZOFF), A., ii, 568.
- alcoholic, without yeast cells (BUCHNER and RAPP), A., ii, 465.
- selection of carbohydrates by different yeasts during (KNECHT), A., ii, 568.
- auto-, of yeast (KUTSCHER), A., ii, 466.
- of pressed yeast (HARDEN and ROWLAND), T., 1227; P., 1901, 189.
- lactic acid, and its practical use (EPSTEIN), A., ii, 119; (CHODAT and HOFMAN-BANG), A., ii, 264.
- Ferments.** See Enzymes and Yeast.
- Ferric acid**, soluble alkali salts of (HABER and PICK), A., ii, 103; (PICK), A., ii, 554.
- Ferric compounds.** See under Iron.
- Ferricyanic acid**, compounds of, with alcohols, aldehydes, esters, ethers and ketones (v. BAEYER and VILLIGER), A., i, 659.
- Ferrisalicic acid** as an indicator (GEROCK), A., ii, 190.
- sodium salt (WOLFF), A., ii, 346.
- Ferrochrome**, estimation of carbon in (BLAIR), A., ii, 74.
- estimation of manganese in (T.), A., ii, 283.
- Ferrocyanic acid**, compounds of, with alcohols, aldehydes, esters, ethers, ethylene oxide and ketones (v. BAEYER and VILLIGER), A., i, 659.
- Ferro-manganese**, estimation of manganese in (NORRIS), A., ii, 579.
- Ferro-silicons**, constituents of (LEBEAU; JOUVE), A., ii, 317.
- analysis of (IBBOTSON and BREARLEY), A., ii, 199.
- estimation of calcium in (GRAY), A., ii, 578.
- Ferrous compounds.** See under Iron.
- "Ferrum oxydatum saccharatum,"** estimation of iron in (GÖBLICH), A., ii, 132.
- Fertilisers**, automatic filter-washer for use in the analysis of (PICKEL), A., ii, 685.
- estimation of the availability of organic nitrogen in (STREET), A., ii, 531.
- See also Agricultural Chemistry.
- Fevers**, composition of the blood in (v. STEJSKAL), A., ii, 404.
- Fibrin**, action of trypsin on (VERNON), A., i, 576.
- Fibrinolysis** (CAMUS), A., ii, 256.
- Fibroin** from silk, hydrolysis of (FISCHER and SKITA), A., i, 783.
- Ficceroic acid** and **Ficcercylic alcohol** (GRESHOFF and SACK), A., i, 446.
- Filicittanic acid** and its salts and bromo- and benzoyl derivatives (REICH), A., i, 212.
- Filter-washer**, automatic (PICKEL), A., ii, 685.
- Fish**, smallest amount of oxygen in water necessary to (KÖNIG and HÜNNEMEIER), A., ii, 457.
- minimum quantity of oxygen required by, and poisonous quantities of carbon dioxide (KUPZIS), A., ii, 665.
- toxic action of electrolytes on (KAHLENBERG and MEHL), A., ii, 327.
- selachian, gastric digestion in (WEINLAND), A., ii, 252, 458.
- Fish meal.** See Agricultural Chemistry.
- Fish-sperm**, histon from (EHRSTRÖM), A., ii, 401.
- Flavinduline chloride**, 11-chloro-, and its interaction with bases (KEHRMANN and HIBY), A., i, 418.
- Flavindulines**, amino- and nitro- (KEHRMANN and EICHLER), A., i, 421.
- Flesh**, nutritive value of (FRENTZEL and SCHREUER), A., ii, 609.
- Flour testing** (ZEGA), A., ii, 583.
- Fluorene**, potassium derivative of (WEISSGERBER), A., i, 521.
- derivatives (DIELS), A., i, 521.
- Fluorene alcohol**, 2-amino-, and its salts (DIELS), A., i, 523.
- Fluorenone**, 2-nitro-, and 2-amino- and its salts (DIELS), A., i, 522.
- Fluorescein** and its substituted derivatives, sensitiveness of, to light (GROS), A., ii, 433.
- and its methyl and ethyl esters, and the acetyl derivative of the ethyl ester (FEUERSTEIN and DUTOIT), A., i, 723.
- disulphide (BLANKSMA), A., i, 461.
- Fluorescence**, apparatus for the observation of (TSVETT), A., ii, 298.
- Fluorindine** (KEHRMANN and GUGGENHEIM), A., i, 421.
- Fluorine:**—
- Hydrofluoric acid** (*hydrogen fluoride*), addition of, to salts of ethylsulphuric acid and some sulphonic acids (WEINLAND and KAPPELLER), A., i, 309.
- Fluorides** of heavy metals in solution, behaviour of (JAEGER), A., ii, 386.
- Hydrofluosilicic acid**, action of, on potassium ferricyanide (MATUSCHEK), A., i, 454.



**Fluorine:—**

**Hydrofluosilicic acid**, action of, on potassium ferrocyanide (MATUSCHEK), A., i, 262.

**Fluorine, detection and estimation of:—**  
detection of, in basic slags, bone meal, superphosphates and animal charcoal (V. LORENZ), A., ii, 193.

estimation of (HARKER), A., ii, 320.

estimation of, in zinc blendes (BULLNHEIMER), A., ii, 191.

**2-Fluorylhydrazine** and its salts (DIELS), A., i, 522.

**Fodder**, decomposition of, by micro-organisms (KÖNIG, SPIECKERMANN, and BREMER), A., ii, 676.

analysis of (BROWNE and BEISTLE), A., ii, 481.

estimation of fat in (JAHN), A., ii, 431.

estimation of proteids in (SCHJERNING), A., ii, 79.

**Fodder fats**, estimation of the acidity of (LOGES and MÜHLE), A., ii, 702.

**Fœtus**, human, mineral composition of the (HUGOUNENQ), A., ii, 405.

**Food**, digestion of, by man (ATWATER and BENEDICT), A., ii, 253.

influence of, on muscular work (HEINEMANN), A., ii, 254.

detection of arsenic in (THOMSON and SHENTON), A., ii, 345.

test for boric acid in, with turmeric paper (JENKINS and OGDEN), A., ii, 346.

detection and estimation of salicylic acid in (PELLET), A., ii, 701.

estimation of boric acid in (LÜHRIG), A., ii, 280.

**Formaldehyde**, solid, preparation and melting point of (HARRIES), A., i, 254.

as a product of the incomplete combustion of carbon compounds (MULLIKEN, BROWN, and FRENCH), A., i, 188.

condensation of, with amines (GOLDSCHMIDT), A., i, 652.

action of a solution of, on calcium carbide (VANINO), A., i, 125.

action of, on *p*-formylphenetidine (GOLDSCHMIDT), A., i, 322.

aqueous, behaviour of, towards gun-cotton (VANINO), A., i, 372.

action of, on hydroxy-acids and sugars (ALBERDA VAN EKENSTEIN), A., i, 120.

condensation of, with indigo-white (BADISCHE ANILIN- and SODA-FABRIK), A., i, 715.

action of, on menthol (WEDEKIND), A., i, 393.

**Formaldehyde**, action of, on methyl anthranilate (MEHNER), A., i, 470; (ERDMANN), A., i, 536, 591.

condensation of, with propaldehyde (KOCH and ZERNER), A., i, 633.

use of, for the synthesis of aromatic alcohols (STOERMER and BEHN), A., i, 726.

action of, on germination (WINDISCH), A., ii, 466.

influence of, on metabolism in children (TUNNICLIFFE and ROSENHEIM), A., ii, 517.

detection of, in milk (RIEGLER), A., ii, 206; (LUEBERT), A., ii, 703.

estimation of (CRAIG; PEŠKA; BLANK and FINKENBEINER), A., ii, 703.

estimation of, gasometrically (RIEGLER), A., ii, 360.

estimation of, in milk (LIVERSEEGE), A., ii, 483.

**Metaformaldehyde**. See Trioxymethylene.

**Paraformaldehyde**, action of acid chlorides on (HENRY), A., i, 581.

**Formaldehydphenylhydrazone**, cyano-, and its nitroso-compound (BERTINI), A., i, 776.

$\alpha$ -nitro-, and its isomeride (BAMBERGER and SCHMIDT), A., i, 565.

nitro-, isomeric, and methyl ethers from them, and phenylmethylhydrazidine (BAMBERGER and SCHMIDT), A., i, 291.

**Formalinsulphuric acid** as a test for alkaloids (WIRTHLE), A., ii, 363; (ELIAS), A., ii, 630.

**Formazyl methyl ketone** (BAMBERGER and DE GRUYTER), A., i, 778.

**Formic acid**, chemical energy of (CAZENEUVE), A., ii, 379.

action of *Bacillus coli communis* on (PAKES and JOLLYMAN), T., 387; P., 1901, 29; (HARDEN), T., 624; P., 1901, 58.

bacterial decomposition of (PAKES and JOLLYMAN), T., 386; P., 1901, 29.

bacterial oxidation of, by nitrates (PAKES and JOLLYMAN), T., 459; P., 1901, 39.

**Formic acid**, amyl ester, action of, on ethyl crotonate (LAPWORTH), T., 1282.

action of, on ethyl sodiocyanoacetate (DE BOLLEMONT), A., i, 116.

**Orthoformic acid**, ethyl or methyl ester, action of, on alkyl cyanoacetates (DE BOLLEMONT), A., i, 116, 117.

**Formylacetic acid**, esters, reactions of sodium derivatives of (WISLICENUS and BINDEMANN), A., i, 361.

- Formyl-*o*-aminoacetophenone** (CAMPS), A., i, 751.
- o*-Formylaminobenzoic acid**, methyl and ethyl esters (MEHNER), A., i, 645. ethyl ester. See also Benzoylformic acid, *o*-amino-, ethyl ester.
- Formyl-*o*-aminophenylpropionic acid** and its ethyl ester (CAMPS), A., i, 751.
- Formylglutaconic acid**, methyl and ethyl esters and their isomerides (WISLICENUS and BINDEMANN), A., i, 361.
- Formylhexamethoxydimethyl-leucaniline** (LIEBERMANN and WIEDERMANN), A., i, 384.
- p*-Formylphenetidine**, action of formaldehyde on (GOLDSCHMIDT), A., i, 322.
- Formylpropionic acid**, ethyl ester, isomeric *p*-nitrobenzoates of (WISLICENUS and WOLFF), A., i, 500.
- Formyl-*o*-tolylglycine** (VORLANDER and MUMME), A., i, 463.
- Forsterite** from Latium (ZAMBONINI), A., ii, 396.
- Fractional distillation**, experiments on (YOUNG), A., ii, 86. in a vacuum with Hempel's dephlegmator (HIRSCHEL), A., ii, 87.
- Frangula**, glucosides in (AWENG), A., i, 39.
- Freezing point** of solutions which are not very dilute, determination of the lowering of the (SMITS), A., ii, 304, 436. of aqueous solutions of non-electrolytes (LOOMIS), A., ii, 492.
- Freezing point curves** of alloys of copper and gold and copper and silver (ROBERTS-AUSTEN and ROSE), A., ii, 25. of isomorphous compounds (BRUNI and GORNI), A., ii, 150.
- Freezing point depressions** in aqueous solutions of electrolytes (MACGREGOR), A., ii, 223. diagram of, for electrolytes (MACGREGOR), A., ii, 8. in solutions containing hydrochloric and sulphuric acids (BARNES), A., ii, 304.
- Freezing point.** See also Cryoscopy.
- Friedel and Crafts' reaction** (BOESEKEN), A., i, 474.
- d*-Fructose.** See Lævulose.
- Fruit juices**, composition of, used in preparing confectionery, syrups, &c. (TRUCHON and MARTIN-CLAUDE), A., ii, 363. analyses of (SPAETH), A., ii, 294.
- Fruits**, presence of methyl alcohol in the fermented juice of (WOLFF), A., i, 110.
- Fruits**, quantity of pentosans in (WITTMANN), A., ii, 414.
- Fuel**, chemical and calorimetric analysis of (LANGBEIN), A., ii, 128. determination of the calorific power of (REBUFFAT), A., ii, 373. Berthier's method for determining the calorific value of (ANTONY and DI NOLA), A., ii, 6. See also Coal.
- "Fugacity"** (LEWIS), A., ii, 10, 639.
- Fulminic acid**, salts, preparation of (ANGELICO), A., i, 516. mercury salt, synthetical application of (SCHOLL and BERTSCH), A., i, 465. action of, on dimethylaniline (SCHOLL and BERTSCH), A., i, 523.
- Fumaric acid** (*ethylenedicarboxylic acid*), synthesis of, from glyoxylic and malonic acids (DOEBNER), A., i, 188. production of, from maleic acid (SCHMIDT), A., i, 63. action of ethyl methylmalonate and ethylmalonate on (MICHAEL), A., i, 123.
- Fumaric acid**, chloro-, ethyl ester, action of, on carvacrol and on thymol (RUHEMANN), T., 1919; P., 1901, 155. action of, on the sodium derivatives of eugenol and *m*-xylenol (RUHEMANN and WRAGG), T., 1186; P., 1901, 187.
- Fungi**, physiological action of three poisonous (CARTER), A., ii, 409.
- Funnels**, new dropping and separating (RAIKOW), A., ii, 91.
- Furfuraldehyde**, condensation of, with succinic acid (FICHTER and SCHEUERMAN), A., i, 479. nitrotolylhydrazone (POPE and HIRD), T., 1143; P., 1901, 186.
- Furfuran**, *di*bromo- and *di*iodo- (PHELPS and HALE), A., i, 555. nitro- (MARQUIS), A., i, 222.
- Furfuran-2:4-dicarboxylic acid** and its methyl ester and salts (FEIST), A., i, 557.
- 2-Furfurylisoamylcarbinol** and its acetate (GRIGNARD), A., i, 680.
- $\alpha$ -Furfurylcarbinyll- $\beta$ -furfurylidene-propionic acid** (FICHTER and SCHEUERMAN), A., i, 480.
- Furfurylideneaminophenylguanidine** nitrate, picrate, and platinumchloride (PELLIZZARI and RICKARDS), A., i, 769.
- Furfurylidenebarbituric acid** (CONRAD and REINBACH), A., i, 411.
- Furfurylidenedifluorylhydrazine** (DIELS), A., i, 522.

**Furfurylidenesuccinic acid** and its salts (FICHTER and SCHEUERMANN), A., i, 479.

**Furnace**, electric. See under Electro-chemistry.  
small laboratory (BRUNO), A., ii, 152.

**Furnaces**, phenomena of combustion in (BOUDOUARD), A., ii, 651.

**Fusel oil**, separation of the amyl alcohols in (MARKWALD; MARKWALD and MCKENZIE), A., i, 248.

### G.

**Gadolinium**, spectrum of (DEMARÇAY), A., ii, 102.

**Galactase**, distribution of, in different milks (BARCOCK, RUSSELL, and VIVIAN), A., ii, 406.

properties of (BARCOCK, RUSSELL, and VIVIAN), A., i, 437.

**Galactosamine** (SCHULZ and DITTHORN), A., i, 507.

**Galactose** from cerebrin (SCHULZ and DITTHORN), A., i, 554.

from xanthorhamnin (VOTOČEK and FRIŠ), A., i, 161.

derivatives of (KOENIGS and KNORR), A., i, 369; (COLLEY), A., i, 671.

*d*-**Galactose**, action of *Bacillus coli communis* on (HARDEN), T., 624; P., 1901, 58.

**Galangin**, methyl and diacetyl derivatives of, and the dibromide of the diacetyl compound (TESTONI), A., i, 92.

**Galena**, estimation of lead in (WILLENZ), A., ii, 196.

**Gallamide**, and *mono*- and *di*-bromo- and their acetyl derivatives (GNEHM and GANSSER), A., i, 326.

**Gallamino-phenyl ethers**, and *p*-phenetole and its *tribromo*- and triacetyl derivatives (GNEHM and GANSSER), A., i, 326.

**Gallein**, constitution of, and its methyl ester, salts, methyl and ethyl ethers, acetyl and benzoyl derivatives, and triphenylcarbamate (ORNDORFF and BREWER), A., i, 724.

**Gallic acid**, detection and estimation of, in tanning materials (SPICA), A., ii, 708.

chloro-, methyl and ethyl esters (MAZZARA and GUARNIERI), A., i, 722.

*dichloro*-, ethyl ester (MAZZARA and GUARNIERI), A., i, 594.

**Gallin** tetra-acetate and pentamethyl ether (ORNDORFF and BREWER), A., i, 724.

**$\alpha$ -Gallonaphthylamine** (GNEHM and GANSSER), A., i, 327.

**Gallotannin**, constitution of (POTTEVIN), A., i, 335.

**Ganglion**, upper cervical, effect of temperature on the activity of the (EVE), A., ii, 178.

**Garnet** from the Fichtelgebirge (DULL), A., ii, 113.

from the Tatra Mountains (GORAZDOWSKI), A., ii, 170.

**Gas**, measurement of the evolution of a (JOB), A., ii, 83.

electrolytic, catalysis of, by colloidal platinum (ERNST), A., ii, 495.

illuminating, estimation of hydrogen sulphide in (TUTWILLER), A., ii, 421.

**Gas analysis** apparatus (SAMOILOFF and JUDIN), A., ii, 621.

**Gas pressure**, law of, between 1.5 and 0.01 mm. of mercury (RAYLEIGH), A., ii, 542.

**Gas purifying material**, spent, estimation of Prussian blue in (NAUSS), A., ii, 43.

**Gases** under the influence of cathode rays, electrical conductivity of (McLENNAN), A., ii, 490.

conductivity produced in, by the motion of negatively charged ions (TOWNSEND), A., ii, 221; (TOWNSEND and KIRKEY), A., ii, 434.

dielectric constant of some, and its dependence on temperature (BADEKER), A., ii, 220.

liquefaction of a mixture of two (DUHEM), A., ii, 227.

liquefied, under atmospheric pressure, apparatus to determine magnetic rotation in (SIERTSEMA), A., ii, 5.

solubility of, in organic solvents (JUST), A., ii, 439.

solubility of, in water (WINKLER), A., ii, 446.

distinction between chemical and physical supersaturation of liquids by (BERTHELOT), A., ii, 8.

viscosity of, as affected by temperature (RAYLEIGH), A., ii, 9.

combustion of (TANATAR), A., ii, 13, 228.

atmospheric, spectroscopic notes concerning the (RAYLEIGH), A., ii, 141.

spectrum of the more volatile, which are not condensed at the temperature of liquid hydrogen (LIVING and DEWAR), A., ii, 213.

combustible, of the atmosphere (GAUTIER), A., ii, 14, 92, 171, 232.

- Gases** produced by Bacteria, apparatus for the collection and examination of (PAKES and JOLLYMAN), T., 322; P., 1900, 189.
- combustible, estimation of phosphorus and acetylene in (EITNER and KEPPELER), A., ii, 689.
- explosive, inflammability of thin layers of (EMICH), A., ii, 150.
- monatomic, a property of (BERTHELOT), A., ii, 639.
- rarefied (COLSON), A., ii, 160.
- from igneous rocks by the action of heat (GAUTIER), A., ii, 171.
- practical methods for the rapid spectroscopic analysis of (BERTHELOT), A., ii, 684.
- analysis of, by means of the electric spark (BERTHELOT), A., ii, 685.
- estimation of cyanogen in (NAUSS), A., ii, 43.
- Gaseous compounds**, molecular specific heats of dissociable (PONSOT), A., ii, 84.
- specific heat of, in chemical equilibrium (PONSOT), A., ii, 302.
- dissociation of, and Gay-Lussac's law (PONSOT), A., ii, 542.
- liquefaction of (CAUBET), A., ii, 147, 148.
- Gastric juice**, influence of certain materials on the quantity and quality of (HERZEN), A., ii, 323.
- digestive power of (FROUIN), A., ii, 561.
- acidity of (BERTHELOT), A., ii, 610.
- estimation of hydrochloric acid in (MEUNIER), A., ii, 342.
- estimation of rennet-ferment in (MEUNIER), A., ii, 115.
- See also Digestion and Stomach.
- Gastric secretion**, substances which stimulate (HERZEN), A., ii, 323; (RADZIKOWSKI; MARK-SCHNORF), A., ii, 401; (FROUIN and MOLINIER), A., ii, 402.
- Gay-Lussac's law** and the dissociation of gaseous compounds (PONSOT), A., ii, 542.
- Geese**, respiratory quotient in (BLEIBTREU), A., ii, 457.
- Geissler potash apparatus**, improvement on the (WETZEL), A., ii, 74.
- Gelatin**, hydrolysis of (FISCHER), A., i, 745.
- new test for (HENZOLD), A., ii, 52.
- Gelatin membrane** as filters, errors in the use of (REID), A., ii, 675.
- Gentianose** and sucrose, presence of, in gentian root (BOURQUELOT and HÉRISSEY), A., ii, 34.
- constitution of (BOURQUELOT and HÉRISSEY), A., i, 258.
- Gentiobiose** (BOURQUELOT and HÉRISSEY), A., i, 258.
- Geolyte** a mineralogical constituent of keuper marl (WÜLFING), A., i, 113.
- cycloGeranic acid** and **cycloGeraniolene** and their isomerides (TIEMANN and SCHMIDT), A., i, 157.
- a-cycloGeranic acid**, constitution of (TIEMANN and TIGGES), A., i, 158.
- β-cycloGeranic acid** and its oxidation products (TIEMANN and SCHMIDT), A., i, 159.
- Geranium**, formation of terpene derivatives in the (CHARABOT), A., i, 38.
- oil of, from Cannes (JEANCARD and SATIE), A., i, 396.
- Geranyl acetate** in eucalyptus oil (SMITH), A., i, 282.
- Germination**. See Agricultural Chemistry.
- Gibbsite** from Klein-Tresny, Moravia (KOVÁŘ), A., ii, 606.
- Gismondite** (*zeagonite*), a new alteration product of nephelite (THUGUTT), A., ii, 112.
- Gland**, submaxillary, metabolism of the (BARCROFT), A., ii, 28, 689.
- suprarenal. See Suprarenal.
- thymus, proteids of the (PEKELHARING and HUISKAMP), A., i, 175; (HUISKAMP), A., ii, 461.
- thyroid, physiological action of substances from the (v. CYON and OSWALD), A., ii, 180.
- Glands**, physiology of (ASHER and CUTTER), A., ii, 176.
- Glass**, illumination of different kinds of (SPRING), A., ii, 297.
- gradual change in, and its influence on thermometry (MARCHIS), A., ii, 491.
- slow action of hydrogen bromide on (BERTHELOT), A., ii, 19.
- reducing action of (COLSON), A., ii, 160.
- Glaucescence** of feldspars (VIOLA), A., ii, 320.
- Glaucine** and its salts (SCHMIDT), A., i, 742; (FISCHER), A., i, 743.
- Glaucium luteum*, alkaloids of (SCHMIDT), A., i, 742; (FISCHER), A., i, 743.
- Glaucophane-schists** (WASHINGTON), A., ii, 172.
- Globulin** as alkali-proteid, and its formation from albumin (STARKE), A., i, 242.
- Globulins** of aleurone-grains of seed (TSCHIRCH and KRITZLER), A., ii, 33.
- Glucamine**, and its oxalate and oxamide (MAQUENNE and ROUX), A., i, 372.
- Glucose** (ISSAEFF), A., ii, 262.

- d*-Gluconic acid, behaviour of, in the organism (MAYER), A., ii, 261.
- Glucoprotein** of bone (HAWK and GIES), A., i, 298; ii, 520.
- Glucoproteins** as a culture media for micro-organisms (LEPIERRE), A., i, 622.
- Glucosamine** from crystallised egg-albumin (LANGSTEIN), A., i, 108.  
action of phenylcarbimide on (STREUDER), A., i, 674.
- Glucose**, commercial, estimation of dextrose and dextrin in (LINDER), A., ii, 134; (MEUNIER), A., ii, 286.
- d*-Glucose. See Dextrose.
- Glucoside**,  $C_{23}H_{24}O_{10}$ , from the action of aqueous potassium hydroxide and methyl iodide on apiin (VONGER-ICHTEN), A., i, 40.  
in beech seedlings (TAILLEUR), A., ii, 466.  
from the flowers of *Delphinium Consolida* (PEKRIN and WILKINSON), P., 1900, 182; (PERKIN), P., 1901, 88.  
in *Frangula*, *Sagrada*, *Rhubarb* and *Ladix Rhamnoides* (AWENG), A., i, 39.
- Glucosides**, synthesis of (FISCHER and ARMSTRONG), A., i, 671.  
preparation of synthetical (RYAN and MILLS), T., 704; P., 1901, 90.  
heat of combustion of (FISCHER and v. LOEBEN), A., ii, 225.  
behaviour of acid aqueous solutions of, towards different solvents, and resisting power of, to putrefaction (PROELSS), A., ii, 706.
- Glucosides**. See also :—  
Apiin.  
Carvacrylglucoside.  
Cereic acid.  
Coriamyrtin.  
*m*-Cresylglucoside.  
Digitonin.  
Digitoxin.  
Erysimin.  
Filicitanic acid.  
Helicin.  
Hesperidin.  
Hydroæsculetin.  
Indican.  
Jalapin.  
Lotusin.  
 $\alpha$ -Naphthylgalactoside.  
Ononin.  
Onospin.  
Osyritrin.  
Phloridzin.  
Quercitrin.  
Rhamnazin.  
Rhamnetin.
- Glucosides**. See :—  
Rhododendrin.  
Robinin.  
Rutin.  
Saponins.  
Solanine.  
Tetraacetyl- $\beta$ -naphthylglucoside.  
Tetracetyl  $\beta$ -phenylglucoside.  
Tutin.  
Violaquercitrin.  
Xanthorhamnin.
- Glutaconic acid** (*propylenedicarboxylic acid*), ethyl ester, and its derivatives, formation of aromatic compounds from (LAWRENCE and PERKIN), P., 1901, 47.  
bimolecular (GUTHZEIT and WEISS), A., i, 314.
- Glutamic acid**, *d*-diethyl ester (FISCHER), A., i, 193.
- Glutaric acid** (*n*-pyrotartaric acid; *propylenedicarboxylic acid*), *r*- $\alpha$ -dibromo- (THIELE), A., i, 182.  
 $\alpha$ -chloro-, and its diethyl ester and salts (JOCHEM), A., i, 129.
- Glutaric diazomide** and **dihydrazide** and their derivatives (CURTIUS and CLEMM), A., i, 68.
- Gluten**, variation in the amounts of, in wheat (VIGNON and COUTOURIER), A., ii, 335.
- Glyceraldehyde**, preparation of, and its phenylhydrazones, *p*-bromophenylosazone, and chlorohydrin and its *p*-bromophenylhydrazone (WOHL and NEUBERG), A., i, 12.
- Glyceraldioxime** (WOHL and NEUBERG), A., i, 13.
- Glyceric acid**, amide, anilide, and *o*- and *p*-toluidides, preparation and rotation of, and preparation of the inactive compounds (FRANKLAND, WHARTON, and ASTON), T., 266; P., 1901, 6.  
esters, hydrolysis of (HANRIOT), A., ii, 175, 324.
- Glycerides**, mixed, in natural fats (HOLDE and STANGE), A., i, 577.
- Glycoarsenic acid**, calcium salt (PAGEL), A., i, 498.
- Glycerol** (*glycerin*), influence of, as solvent, on the rotation of ethyl tartrate (PATERSON), T., 178; P., 1900, 177.  
veratrine-like action of (LYLE), A., ii, 181.  
diaryl ethers, action of phosphorus chlorides on (BOYD), T., 1221; P., 1901, 188.  
esterification of (BÖTTINGER), A., i, 661.  
salicylate (TAUBER), A., i, 538.

- Glycerol** (*glycerin*), examination of (FERRIER), A., ii, 203.  
 estimation of (LEWKOWITSCH), A., ii, 285.  
 estimation of, in fat (BULL), A., ii, 138.
- Glycine** (*glycocine*; *aminoacetic acid*), reactions of (JOLLES), A., i, 30, 191.  
 ethyl ester, its reactions and picrate (FISCHER), A., i, 192.
- Glycine anhydride** (BALBIANO), A., i, 454.
- Glycogen** in animal organs (MEILLÈRE and LÉPER), A., ii, 326.  
 occurrence and disappearance of, in yeast cells (MEISSNER), A., ii, 263.  
 in parasitic worms (WEINLAND), A., ii, 258.  
 formation of, after feeding on galactose (WEINLAND), A., ii, 29.  
 formation of, after proteid feeding (BLUMENTHAL and WOHLGEMUTH), A., ii, 610.  
 composition and properties of (NERKING), A., ii, 462.  
 molecular weight of (JACKSON), A., i, 371.  
 as a stimulant of gastric secretion (MARK-SCHNORF), A., ii, 402.  
 of yeast, alcohol and carbon dioxide produced by the autofermentation of (HARDEN and ROWLAND), T., 1228; P., 1901, 189.  
 estimation of (LEBBIN), A., ii, 45; (BUJARD), A., ii, 700.  
 estimation of, by the Pflüger-Nerking method (SALKOWSKI; PFLÜGER), A., ii, 135.
- Glycol**. See Ethylene glycol.
- Glycol**,  $C_8H_{16}O_2$ , from ethyl succinate and magnesium ethiodide (VALEUR), A., i, 317.  
 $C_8H_{16}O_2$ , from the oxidation of dihydromyrcene (SEMMLER), A., i, 732.  
 $C_{10}H_{20}O_2$ , from the reduction of diosphenol (KONDAKOFF and BACHT-SCHÉEFF), A., i, 335.  
 $C_{10}H_{22}O_2$ , and its diacetyl derivative, from isovaleraldehyde (LEDERER; ROSINGER), A., i, 669.  
 $C_{11}H_{15}O_4N$ , from *o*-nitrobenzaldehyde and isobutaldehyde (HERZOG and KRUH), A., i, 213.  
 $C_{12}H_{18}O_3$ , and  $C_{13}H_{20}O_3$ , and their diacetyl derivatives, from *o*-methoxy- and *o*-ethoxy-benzaldehyde and isobutaldehyde (HERZOG and KRUH), A., i, 213.  
 from isobutaldehyde and isovaleraldehyde, action of sulphuric acid on (LÖWY and WINTERSTEIN), A., i, 626.
- Glycolaldehyde** and its diphenylosazone and *p*-nitrophenylosazone (WOHL and NEUBERG), A., ii, 13.
- Glycollamide**, acetyl and bromoamide derivatives (HANTZSCH and VOEGLLEN), A., i, 676.
- Glycollic acid**, estimation of, in presence of glycine (BALBIANO), A., i, 454.
- Glycolliminohydrin**, formula and conductivity of (HANTZSCH and VOEGLLEN), A., i, 676.
- Glycurone**. See Glycuronolactone.
- Glycurone-amylycerapital**, -diphenylhydrazone, and -thiosemicarbazone (NEUBERG), A., i, 66.
- Glycuronic acid**, combination of, with fatty compounds (NEUBAUER), A., ii, 614.  
 its alkaloidal salts, and detection of, in, and separation of, from, sugars (NEUBERG), A., i, 66.
- Glycuronolactone** (*glycurone*), its oxime, semicarbazone and phenylhydrazones (GIEMSA), A., i, 11; (NEUBERG), A., i, 66.  
 separation of, from sugars (NEUBERG), A., i, 66.
- Glycylglycine** and its salts, esters, and phenylcarbimide and its ethyl ester (FISCHER and FOURNEAU), A., i, 675.
- Glyoxal**, condensation of, with benzaldehyde and ammonia (WEWIÓRSKI), A., i, 353.
- Glyoxalines**, substituted (KUNCKELL), A., i, 293; (KUNCKELL and DONATH), A., i, 567.
- Glyoxylic acid** and its salts (DOEBNER and GLASS), A., i, 629.  
 chemistry of (HOPKINS and COLE), A., i, 310.  
 compounds of, with guanidine and aminoguanidine (DOEBNER and GÄRTNER), A., i, 261, 630.
- Glyoxylthiocarbamide** (DOEBNER and GLASS), A., i, 630.
- Gneiss**, carbonaceous, in the Black Forest (ROSENBUSCH), A., ii, 113.
- Gold** from Western Australia (SIMPSON), A., ii, 454.  
 recovery of, from cupriferous materials (GODSHALL), A., ii, 42.  
 melting point of (HOLBORN and DAY), A., ii, 85.  
 diffusion of, in solid lead at the ordinary temperature (ROBERTS-AUSTEN), A., ii, 9.  
 colloidal, catalytic action of (BREDIG and REINDERS), A., ii, 442.  
 action of ammonia on, at high temperatures (BEILBY and HENDERSON), T., 1253; P., 1901, 190.

- Gold**, Egyptian, composition of ancient (BERTHELOT), A., ii, 25.
- Gold alloys** from Egyptian tombs (BERTHELOT), A., ii, 514.  
with copper, certain properties of (ROBERTS-AUSTEN and ROSE), A., ii, 25.
- Gold sodium chloride**, assay of (JOHNSON & SONS), A., ii, 350.  
silver tellurides from Colorado (PALACHE), A., ii, 109.  
from Coolgardie, Western Australia (KRUSCH), A., ii, 393; (CARNOT), A., ii, 515.  
from Cripple Creek and Coolgardie (RICKARD), A., ii, 663.  
See also Calaverite, Coolgardite, Petzite, and Sylvanite.
- Gold, estimation of:**—  
sources of loss in the estimation of, in copper bars, and a method for its avoidance (VAN LIEW), A., ii, 41.  
estimation of, in pyrites (BUDDÉUS; LOEVY), A., ii, 133.
- Gold nuggets**, crystalline structure of (LIVERSIDGE), A., ii, 662.
- Gorse**. See Agricultural Chemistry.
- Gout**, metabolism in (WATSON), A., ii, 68.
- Granin** in the root swellings of *Arrhenatherum bulbosum* (HARLAY), A., ii, 267.
- Granatoneoxime** and its reduction, and its picrate and benzoyl derivative (PICCININI and CORTESE), A., i, 740.
- ψ-Granatylamine** and its salts and phenylthiocarbimide (PICCININI and CORTESE), A., i, 740.
- Granite**, action of acids on (GAUTIER), A., ii, 14, 92.
- Grapes**, presence of invertin in (MARTINAND), A., ii, 35.  
pressed. See Agricultural Chemistry.
- Graphite** from Ceylon (COOMARA-SWAMY), A., ii, 171.
- Grasses**. See Agricultural Chemistry.
- Green manure**. See Agricultural Chemistry.
- Groups**, non-occurrence of direct interchange of, in a molecule (LAPWORTH), T., 1265; P., 1901, 93.
- Guaiacol carbonate** (CHEMISCHE FABRIK VON HEYDEN), A., i, 696.  
chlorocarbonate (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 662.
- Guaiacol**, tribromo-, action of nitric acid on (COUSIN), A., i, 82.  
p-nitro-, and its ethyl ether (FREYSS), A., i, 321.
- Guaiacolsulphonic acid**, triphenylguanidine ester (GOLDSCHMIDT), A., i, 643.
- 2-Guaiacyloxymethyl-5-methyl- and -5-ethoxy-benziminazoles** and their picrates (COHN), A., i, 352.
- 1-Guaiacyloxymethylbenzoxazole** (COHN), A., i, 752.
- Guanamines**, α-disubstituted (CRAMER), A., i, 771.
- Guanazoguanazole** and its salts and acetyl derivatives (PELLIZZARI and RONCAGLIOLI), A., i, 773.
- Guanazole** and its derivatives, nomenclature of (PELLIZZARI and RONCAGLIOLI), A., i, 774.
- Guanidine sulphonates** (REMSEN and GARNER), A., i, 270.
- γ-Guanidinebutyric acid** (KUTSCHER), A., i, 561.
- Guanidineglyoxylic acid**, and amino- (DOEBNER and GÄRTNER), A., i, 261, 630.
- Guanine**, presence of, in commercial uric acid (HUGOUNENQ), A., i, 262.  
electrolytic reduction of (TAFEL and ACH), A., i, 426.
- Guano**. See Agricultural Chemistry.
- Guanylcarbamide sulphonates** (REMSEN and GARNER), A., i, 270.
- Guanylic acid** (BANG; KOSSEL; LEVENE), A., i, 299.  
physiological action of (BANG), A., ii, 408.
- Gum arabic**, amount of pentosans in (HEFELMANN), A., ii, 535.  
evaluation of (FROMM), A., ii, 426; (DIETERICH), A., ii, 584.
- Gum tragacanth** (TOLLENS), A., i, 453.  
constituents of (O'SULLIVAN), T., 1164; P., 1901, 156.  
detection of, in cocoa and chocolate (WELMANS), A., ii, 288.
- Gun-cotton**, behaviour of aqueous formaldehyde towards (VANINO), A., i, 372.  
estimation of soluble nitrocellulose in (QUINAN), A., ii, 480.
- Gypsum**, transformation of, into anhydrite (VAN'T HOFF, HINRICHSSEN, and WEIGERT), A., ii, 506.  
estimation of unburnt and overburnt, in the plaster of Paris from the kilns (PÉRIN), A., ii, 129.
- Gyrophoric acid**, formula of (HESSE), A., i, 151.
- Gyrophorin** (ZOPF), A., i, 88.

## H.

- Hæmatic acids**, constitution of the (KÜSTER), A., i, 58, 298.
- Hæmatin**, action of reducing agents on (MILROV), A., i, 656.

- Hæmatin**, oxidation of, by ammonium persulphate (HUGOUNENQ), A., i, 242.  
 Arnold's neutral (VAN KLAVEREN), A., i, 782.
- Hæmatoxylin** (HERZIG and POLLAK), A., i, 478.
- Hæmin**, reduction products and constitution of (NENCKI and ZALESKI), A., i, 434.  
 detection of, in blood (RICHTER), A., ii, 296.  
 iodo- (KURAÉEFF), A., i, 298.
- Hæmocyanin** (HENZE), A., i, 783.
- Hæmoglobin**, influence of various substances on the crystallisation of (V. STEIN), A., i, 176.  
 estimation of, colorimetrically (HALDANE), A., ii, 488.  
 crystals for the distinction between animal and human blood (MOSER), A., ii, 712.  
 new instrument for the estimation of, in blood (GAERTNER), A., ii, 712.  
 cell for the clinical estimation of, in urine (ADAM), A., ii, 488.
- Carboxyhæmoglobin**, behaviour of, in the magnetic field and electrolysis of (GAMGEE), A., i, 782.
- Iodohæmoglobin** (KURAÉEFF), A., i, 298.
- Methæmoglobin** (KOBERT), A., i, 242.  
 behaviour of, in the magnetic field (GAMGEE), A., i, 782.
- Oxyhæmoglobin**, behaviour of, in the magnetic field and electrolysis of (GAMGEE), A., i, 782.  
 from horses, decomposition products of (LAWROFF), A., i, 243.
- Hæmolysis** produced by solanine (HÉDON), A., ii, 325.
- Hæmopyrrole** and its picrate and compound with mercuric chloride (NENCKI and ZALESKI), A., i, 434.  
 reduction of phyllocyanin to (NENCKI and MARCHLEWSKI), A., i, 554.
- Halogen compounds**, organic, dissolved in ethyl alcohol, decomposition of, by sodium (LÖWENHERZ), A., ii, 308.
- Halogens**, action of, on frog's muscles (STOCKMAN and CHARTERIS), A., ii, 255.  
 test for, in blowpipe analysis (NICHOLS), A., ii, 342.
- Halphen's test** for cotton-seed oil (WRAMPMEYER), A., ii, 207;  
 (SOLTSJEN), A., ii, 292, 430.
- Harman** and its amino-derivatives, **Harmaline**, **Harmine**, and **Harmalol** from *Peganum Harmala* (FISCHER), A., i, 405.
- Hauerite**, chemical action between dry, and various metals (STRÜVER), A., ii, 317.
- Hay**. See Agricultural Chemistry.
- Heat**. See Thermochemistry.
- Helicin** cyanohydrin (FISCHER), A., i, 275.
- Helium**, occurrence of, in uranium minerals (KOHLSCHÜTTER), A., ii, 598.  
 preparation and physical properties of (RAMSAY and TRAVERS), A., ii, 237.  
 isolation of, from air, and liquefaction of (DEWAR), A., ii, 597.  
 spectrum of (LIVEING and DEWAR), A., ii, 213.  
 refraction of (RAMSAY), A., ii, 141.
- m-Hemipinic acid** and its ethylimide (GILBODY, PERKIN, and YATES), T., 1400; P., 1899, 28, 75, 241; 1900, 107.
- Hemp-cake**. See Agricultural Chemistry.
- Hentriacontane** and **Heptacosane** from tobacco leaf (THORPE and HOLMES), T., 982; P., 1901, 170; (KISSLING), A., ii, 680.
- Heptacetylchloromaltose** and **Heptacetyl-β-methylmaltoside** (FISCHER and ARMSTRONG), A., i, 671.
- cycloHeptadiene** and its **di**bromide (WILLSTÄTTER), A., i, 224.
- n-Heptane** from coniferous trees (BLASDALE), A., i, 357.
- Heptanedicarboxylic acids**. See :—  
 Azelaic acid.  
 Diethylglutaric acid.  
 Methylpropylglutaric acid.  
 α-Propyladipic acid.
- Heptanetricarboxylic acids**. See :—  
 Ethylpentanetricarboxylic acid.  
 α-Propylbutanetricarboxylic acid.  
 Trimethylbutanetricarboxylic acid.
- Δ<sup>1,3,5</sup>cycloHeptatriene**, synthesis and physical constants of (WILLSTÄTTER), A., i, 649.
- Δ<sup>1,3,6</sup>cycloHeptatriene** (*tropilidene*) from suberone (WILLSTÄTTER), A., i, 223.  
*mono-* and *di*-hydrobromide (WILLSTÄTTER), A., i, 225.
- β-cycloHeptatrienecarbonylamide** (BRAREN and BUCHNER), A., i, 385.
- Δ<sup>2</sup>-cycloHeptene**, amino-, and its salts and phenylthiocarbamide, and its isomeride (WILLSTÄTTER), A., i, 224.
- Δ<sup>2</sup>-cycloHeptenecarboxylic acid**, ethyl ester, chloride, azide, and hydrazide (WILLSTÄTTER), A., i, 649.
- cycloHeptenecarboxylic acids**, **Δ<sup>1</sup>-** and **Δ<sup>2</sup>-** (WILLSTÄTTER), A., i, 224, 649.
- Hepteno-aldehyde** (KOHN), A., i, 255.
- Heptenoic acid** (β-methyl-γδ-hexenoic acid), γδ-dibromo- (V. PECHMANN), A., i, 65.



- Heptenonitrile** (KOHN), A., i, 255.
- Hepthydroxamic acid** (ANGELICO and FANARA), A., i, 708.
- Heptinene** (*βδ-dimethyl-βδ-pentadiene*) and its tetrabromide, dihydrobromide and dimeric compound (GRIGNARD), A., i, 680.
- Heptioic acid** (*β-methylhexoic acid*), *γδ-dibromo-* (V. PECHMANN), A., i, 65.
- n*-**Heptioic anhydride** (KRAFFT and ROSINY), A., i, 113.
- Heptolactoneacetic acid** and its salts (FITTIG and GUTHRIE), A., i, 122.
- Heptyl alcohol**, action of, on its sodium derivative (GUERBET), A., i, 182.
- Heptylamine soaps**, action of water on (KRAFFT and FUNCKE), A., i, 63.
- Heptylene glycol** and its diacetyl derivative (KOHN), A., i, 255.
- Heptylidenedianiline** anhydrosulphite (EIBNER), A., i, 378.
- Herrings**, chemical and microbiological investigations on the salting of (SCHMIDT), A., ii, 409.
- Hesperidin**, action of, on the kidneys (V. KÓSSA), A., ii, 31.
- Heteroalbumose**. See Albumose.
- Heumite**, a dyke-rock from Heum (BRÜGGER), A., i, 169.
- Hexadecenoic acid** (THOMS and FENDLER), A., i, 252.
- Hexadecic anhydride** (*palmitic anhydride*) (KRAFFT and ROSINY), A., i, 113.
- Hexaethoxydiphenyl** (BREZINA), A., i, 701.
- Hexahydrobenzene**. See *cyclo*Hexane.
- Hexahydronaphthalene**, dispersion of (PELLINI), A., ii, 365.
- Hexahydroxyanthraquinone**, 1:3:4:5:7:8-, formation of (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 729.
- Hexahydroxyaurin**. See Eupittone-black.
- Hexahydroxydiphenyl** and its acetylation (BREZINA), A., i, 701.
- Hexahydro-*m*-xylene** and iodo- (LEES and PERKIN), T., 349.
- Hexahydroxyleucaniline** and its nona-acetyl derivative and hydriodide and hydrochloride (LIEBERMANN and WIEDERMANN), A., i, 384.
- Hexahydro-xylic acid**. See Dimethyl-*cyclo*hexanecarboxylic acid.
- Hexamethoxyaurin**. See Eupittone.
- Hexamethyl-4:4':4''-tri-amino-2-hydroxy-triphenylmethane** and **Hexamethyl-4:4':4''-tri-aminophenylfluorene** (HALLER and GUYOT), A., i, 569.
- Hexamethylene**. See *cyclo*Hexane.
- Hexamethylenediamine**. See Hexane, *αα*-diamino-.
- Hexamethylene-dicarbanilide** and -carbamide (CURTIU and CLEMM), A., i, 69.
- Hexamethylenetetramine** (*urotropine*), influence of, on intestinal putrefaction (LOEBISCH), A., ii, 667.
- Hexane** (*β-methylpentane*), *βδ*-diamino-, and its phosphate (HARRIES), A., i, 194.
- Hexane**, *αα*-diamino-, synthesis of, from suberic acid, and its diacetyl and dibenzoyl derivatives and salts (CURTIUS and CLEMM), A., i, 69.
- bromo-. See Hexyl bromide.
- βδ*-dibromo-, and its isomeride (WISLIGENUS, PETERS, SCHRAMM, and MOHR), A., i, 665.
- βγ*-dibromo-, and its stereoisomeride (MOHR), A., i, 364.
- cyclo*Hexane (*hexahydrobenzene*) (SABATIER and SENDERENS), A., i, 459.
- preparation of (SABATIER and SENDERENS), A., i, 195.
- cyclo*Hexane, *cyclo*Hexanol, *cyclo*Hexanone, and *cyclo*Hexanepinacone (ZELINSKY), A., i, 683.
- Hexanedicarboxylic acids**. See:—  
Dimethyladipic acid.  
*α*-Ethyladipic acid.  
Methylethylglutaric acid.  
*α*-Methylpimelic acid.  
*α*-Propylglutaric acid.  
*iso*Propylglutaric acid.  
Trimethylglutaric acid.
- Hexanetetracarboxylic acids**. See Methylpentanetetracarboxylic acids.
- Hexanetricarboxylic acids**. See:—  
Dimethylbutanetricarboxylic acids.  
*α*-Propylpropanetricarboxylic acid.
- αβ*-Hexanetriol (TRAUBE and LEHMANN), A., i, 502.
- Δ*<sup>1</sup>-*cyclo*Hexenecarboxylic acid, 2-amino-, ethyl ester (DIECKMANN), A., i, 542.
- β*-Hexene-*ε*-one-*γδ*-dicarboxylic acid, *β*-amino-, ethyl ester (KNORR and RABE), A., i, 163.
- Hexenoic acid** (*n-pentenecarboxylic acid*) (WALKER and LUMSDEN), T., 1200.
- Hexenoic acids**, *γδ*- and *δε*-, preparation of (FICHTER and LANGGUTH), A., i, 63.
- Hexinene** (*β-methyl-αδ-pentadiene*; *as-methylallyl-ethylene*) (LJUBARSKY), A., i, 181.
- Hexinene** (*methylisoprene*; *methylpentadiene*) (HARRIES), A., i, 194.
- Hexinene** (*diisopropenyl*) (KONDAKOFF), A., i, 62, 305.
- polymerisation of (KONDAKOFF), A., i, 625.
- di*- and *tetra*-bromides (KONDAKOFF), A., i, 62.
- n*-Hexoamide (AUTENRIETH), A., i, 186.

- Hexoic acid** (*caproic acid*),  $\alpha$ -amino-,  $i$ -ethyl ester (FISCHER), A., i, 193.
- isoHexoic acid** ( *$\gamma$ -methylvaleric acid*) and its  $\gamma$ -chloro-derivative (NOYES), A., i, 631.
- $\alpha$ -chloro-, and its ethyl ester (JOICHEM), A., i, 129.
- n-Hexoic anhydride** (AUTENRIETH), A., i, 186.
- isoHexolactone**, preparation of (NOYES), A., i, 631.
- Hexon bases** in deuterio- and hetero-albumoses (HASLAM), A., i, 492.
- Hexoylactic acid** and its methyl and ethyl esters (MOUREU and DELANGE), A., i, 360.
- isoHexoyl isobutyric acid**, ethyl ester (BLAISE), A., i, 253.
- s-n-Hexoylhydrazide** (AUTENRIETH and SPIESS), A., i, 230.
- Hexyl bromide** (BODROUX), A., i, 306; (MOUNEYRAT), A., i, 441.
- Hexylene**, oxidation of (ENGLER and FRANKENSTEIN), A., i, 658.
- Hexylene** ( *$\beta$ -dimethyl- $\beta$ -butylene*) dibromide and dichloride, action of alcoholic potash on (KONDAKOFF), A., i, 62.
- Hexylpropionic acid**. See Noninoic acid.
- Hibernation** in bats (RULOT), A., ii, 256.
- Hibiscus esculentus*. See Agricultural Chemistry.
- Hippuric acid**, oxidation of, to carbamide (JOLLES), A., i, 30.
- metabolism of (JOLLES), A., ii, 115; (LEWIN), A., ii, 518.
- estimation of (CATES), A., ii, 358.
- Histon** from fish sperm (EHRSTRÖM), A., ii, 401.
- Homopilopic acid**, constitution of and its ethyl ester and barium salt (JOWETT), T., 1938; P., 1901, 198.
- Homochelidonine** and its isomerides and salts (SCHMIDT), A., i, 742; (FISCHER), A., i, 743; (WINTGEN), A., i, 744.
- Hops**. See Agricultural Chemistry.
- Hornblende** from Butte, Montana (WEED), A., ii, 65.
- from Christiania district (BRÖGGER), A., ii, 169.
- from the Tatra Mountains (GORAZDOWSKI), A., i, 170.
- Hornblende** from Brandberget (BRÖGGER), A., ii, 170.
- Horses**. See Agricultural Chemistry.
- Hübl's iodine solution (KITT), A., ii, 587.
- Hübnerite** from Nova Scotia (HOFFMANN), A., ii, 319.
- Humic acid** and its rôle in nature (BORNTRÄGER), A., ii, 122.
- estimation of (BORNTRÄGER), A., ii, 212.
- Humic acids**, free, in mineral soil and their importance in agriculture (IMMENDORFF), A., ii, 620.
- Humus**, estimation of (RIMBACH), A., ii, 37.
- estimation and composition of, and its nitrification (RIMBACH), A., ii, 37.
- estimation of, in soil (BIELER and ASÖ), A., ii, 709.
- See also Agricultural Chemistry.
- Hussakite**, allied to xenotime, from Brazil (KRAUS and REITINGER), A., ii, 395.
- Hydantoic acid** (*carbaminoacetic acid*), ethyl ester and nitroso-derivative (HARRIES and WEISS), A., i, 71.
- Hydantoin**, preparation of (HARRIES and WEISS), A., i, 71.
- Hydration**, substances which accelerate or retard (ROHLAND), A., ii, 18.
- of dissolved substances (NERNST; LOTMAR), A., ii, 12; (GARRARD and OPPERMAN), A., ii, 13.
- Hydraziaetic acid** and its methyl ester (HANTZSCH and LEHMANN), A., i, 133.
- Hydrazine**, action of, on the isomeric methyl butyrylacetoacetates (BONGERT), A., i, 409.
- action of, on oxalacetic acid (FENTON and JONES), T., 93; P., 1900, 205.
- Hydrazine hydrate**, condensation of, with acetylacetone (GRAY), T., 682; P., 1901, 90.
- action of, on  $\alpha$ -methyl- $\beta$ -ethylacetaldehyde (DEMME), A., i, 255.
- Hydrazines**, aromatic, action of nitrosobenzene on (SPITZER), A., i, 98.
- reaction of, with wood (COVELLI), A., ii, 705.
- s-Hydrazines**, secondary acid, simple method of obtaining (AUTENRIETH and SPIESS), A., i, 230; (STOLLÉ), A., i, 316.
- o-Hydrazinobenzoic anhydride**, preparation of (FISCHER and SEUFFERT), A., i, 411.
- 6-Hydrazino-4-methylpyrimidine** (GABRIEL and COLMAN), A., i, 427.
- 8-Hydrazino-4-methylumbelliferone** (v. PECHMANN and OBERMILLER), A., i, 337.
- $\beta$ -o-, -m-, and -p-Hydrazinophenylbenzimidazoles and their salts (MIKLASZEWSKI and v. NIEMENTOWSKI), A., i, 761.
- Hydrazobenzene**, autooxidation of (MANCHOT and HERZOG), A., i, 574.
- Hydrazobenzenes**, action of, on aldehydes (RASSOW; RASSOW and LUMMERZHEIM), A., i, 777.

**Hydrazodiphenyls**, products of the transformation of (FRIEBEL and RASSOW), A., i, 575.

***o*-Hydrazotoluene**, *p*-diamino- (ELBS and SCHWARZ), A., i, 619.

**Hydrindacene** and its derivatives (EPHRAIM), A., i, 688.

**Hydrindamine** bromocamphorsulphonate and isomeric *cis*- $\pi$ -camphanates (KIPPING and HALL), T., 439; P., 1901, 37.

camphor- $\pi$ -sulphonates, isomeric (KIPPING), T., 370; P., 1901, 32.

mandelates, isomeric (KIPPING and HALL), T., 444; P., 1901, 36.

***dl*-Hydrindamine** camphor- $\alpha$ -sulphonate and *d*-hydroxy-*cis*- $\pi$ -camphanate (KIPPING and HALL), T., 437; P., 1901, 37.

**Hydrindene**, action of nitric acid on (DÜNKELSBÜHLER), A., i, 44.

**Hydriodic acid**. See under Iodine.

**Hydroæsculetin** (LIEBERMANN and WIEDERMANN), A., i, 736.

**Hydrobromic acid**. See under Bromine.

**Hydrocarbon** from the distillation of quinolylenphenylenemethane (NÖLTING and BLUM), A., i, 728.

$C_5H_8$ , from lupulinic acid (BARTH), A., i, 40.

$C_6H_{10}$ , from dimethylallylcarbinol (LJUBARSKY), A., i, 181.

$C_8H_{14}$ , from the distillation of subereneacetic acid (WALLACH and VAN BECK-VOLLENHOVEN), A., i, 156.

$C_9H_{14}$ , from the reduction of terpinene nitrosite (SEMMLER), A., i, 331.

$C_9H_{16}$ , from chlorotrimethylhexamethylene, sodium, and dry ether (MABERY and SIEPLEIN), A., i, 306.

$C_9H_{16}$ , and its *di*bromide, from the action of sulphuric acid on the glycol from isobutaldehyde and isovaleraldehyde (LÖWY and WINTERSTEIN), A., i, 626.

$C_{10}H_{16}$ , from the oil of buchu leaves (KONDAKOFF and BACHTSCHÉEFF), A., i, 334.

$C_{10}H_{18}$ , from the ester  $C_{13}H_{22}O_2$  (v. BRAUN), A., i, 157.

$C_{12}H_{16}$ , from quinitol (WILLSTÄTTER and LESSING), A., i, 265.

$C_{14}H_{26}$ , from the distillation of the wax of the wild fig tree (GRESHOFF and SACK), A., i, 446.

$C_{15}H_{30}$ , from beeswax (GRESHOFF and SACK), A., i, 446.

$C_{16}H_{14}$ , from the action of sodium ethoxide on acetophenone and ethyl malonate (SIOBBE), A., i, 549.

**Hydrocarbon**,  $C_{16}H_{34}$ , from the distillation of the wax  $C_{37}H_{74}O_2$  (GRESHOFF and SACK), A., i, 446.

$C_{18}H_{20}$ , from phenylmethylethylene (GRIGNARD), A., i, 681.

$C_{20}H_{32}$ , from sandarac resin (HENRY), T., 1156; P., 1901, 187.

$C_{20}H_{38}$ , from the action of acetone on magnesium, ether, and 1-methylcyclohexyl-3 iodide (ZELINSKY), A., i, 661.

( $C_{23}H_{18}$ ) $_x$ , from the reduction of hydroxybenzylbenzylideneindene (THIELE), A., i, 76.

**Hydrocarbons** in Californian petroleum, chloro-derivatives of (MABERY and SIEPLEIN), A., i, 306.

coal tar, microchemical distinction of the (BEHRENS), A., ii, 351.

from shale naphtha (STUART), A., i, 109.

from Texas petroleum (MABERY), A., i, 441.

formation of, by direct union of carbon and hydrogen (BONE and JERDAN), T., 1042; P., 1901, 162.

generation of, by metallic carbides (BERTHELOT), A., i, 245.

formation of, from nitro-compounds, by the action of metals (SABATIER and SENDERENS), A., i, 638.

synthesis, of, by means of organomagnesium compounds (TISSEIER and GRIGNARD), A., i, 316; (GRIGNARD), A., i, 393, 679.

decomposition of, at high temperatures (BONE and JERDAN), P., 1901, 164.

action of cuprous salts on (BERTHELOT), A., i, 493.

acetylenic, condensation of, with formaldehyde (MOUREU and DESMOTS), A., i, 442.

acyclic, action of aluminium bromide on (POURET), A., i, 305.

aromatic, vapour pressure of a series of (WINKELMANN), A., ii, 57; (WÖRINGER), A., ii, 87.

hydrogenation of (SABATIER and SENDERENS), A., i, 459.

ethylenic, formation of (BÉHAL), A., i, 246; (MASSON), A., i, 250.

saturated, synthesis of (TISSEIER and GRIGNARD), A., i, 316.

terpilenic, complete synthesis of (BERTHELOT), A., i, 247.

doubly unsaturated, preparation of (HARRIES), A., i, 194.

See also Olefines and Terpenes.

**Hydrocarbons**. See also:—

Acenaphthalene.

Acenaphthene.

Acetylene.

**Hydrocarbons.** See :—

Anylenes.  
 Anthracene.  
 Benzene.  
 Benzylideneindene.  
 Bisdihydrophenanthrene.  
 Bisdihydrophenanthrylene.  
 Butane.  
*iso*Butane.  
 Butinenes.  
*iso*Butylbenzene.  
*iso*Butylene.  
 $\psi$ -Butylenes.  
 $\beta$ -Butylidenecyclopentene.  
 Camphane.  
 Camphene.  
 Carvestrene.  
 Cinnamylideneindene.  
 Citraptene.  
 Crotonylene (*butinene*).  
 Cumene.  
 Cymenes.  
 Decanaphthene.  
 Dibenzyl.  
 Dibenzylmethane.  
 Dihydroanthracene.  
 Dihydromyrcene.  
*cyclo*Dihydromyrcene.  
 Dihydronaphthalene.  
 Dihydrotoluene.  
 Dimenthyl.  
 Dimethylacetylene (*butinene*).  
 $\beta\gamma$ -Dimethyl- $\beta$ -butylene (*hexylene*).  
 $s$ -Dimethylethylenes ( $\psi$ -*butylenes*).  
 Dimethylfulvene.  
 $\beta\zeta$ -Dimethyl- $\delta\zeta$ -heptadiene (*noninene*).  
 Dimethylcyclohexanes (*dimethylhexamethylenes*).  
 Dimethylindacene.  
 $\beta\zeta$ -Dimethyl- $\beta\zeta\theta$ -nonatriene.  
 $\beta\delta$ -Dimethyl- $\beta\delta$ -pentadiene (*heptinene*).  
 Dimethylpentamethylene.  
 1:1-Dimethylcyclopropane (1:1-*dimethyltrimethylene*).  
 Dicyclopentane.  
 Diphenyl.  
 $\alpha\delta$ -Diphenyl- $\alpha\gamma$ -butadiene.  
 $s$ -Diphenylethane.  
 $s$ -Diphenylethylene (*stilbene*).  
 $\alpha\beta$ -Diphenyl- $\beta$ -methylpropane.  
 $\alpha\theta$ -Diphenyl- $\alpha\gamma\eta$ -octatetrenc.  
 1:2-Diphenylcyclopentane.  
 3:5-Diphenylisocyclopentenine.  
 Diphenylphenylenemethane.  
 Diisopropenyl (*hexinene*).  
 Dodecanaphthene.  
 Durene.  
 Ethane.  
 Ethylacetylene (*butinene*).  
 Ethylbenzene.  
 Ethylene.

**Hydrocarbons.** See :—

Ethylcyclohexane.  
 $\gamma$ -Ethyl- $\beta$ -hexene (*octylene*).  
 Ethylmenthane.  
 $p$ -Ethylphenylacetylene.  
 $p$ -Ethylstyrene.  
 Fenchene.  
 Fluorene.  
*cyclo*Geraniolene.  
 Hentriacontane.  
 Heptacosane.  
*cyclo*Heptadiene.  
 $n$ -Heptane.  
*cyclo*Heptatrienes.  
 Heptinene.  
 Hexahydrobenzene.  
 Hexahydronaphthalene.  
 Hexahydro-*m*-xylene.  
 Hexamethylene.  
 Hexane.  
*cyclo*Hexane.  
 Hexinenes.  
 Hexylene.  
 Hydrindacene.  
 Hydrindene.  
 Indacene.  
 Indene.  
 $\psi$ -Limonene.  
 Menthene.  
 Mesitylene.  
 Methane.  
 Methenementhane.  
 $\gamma$ -Methylbutane (*pentane*).  
 $\beta$ -Methyl- $\beta$ -butylene (*amylene*).  
 1-Methyl-2:3-diphenylcyclopentane.  
 Methylene.  
 Methylethylfulvene.  
 1-Methyl-4-ethylcyclohexane.  
 $\beta$ -Methylhepta- $\beta$ -diene (*octinene*).  
 $\beta$ -Methylheptene (*octylene*).  
 Methylcyclohexadiene.  
 Methylcyclohexane (*methylhexamethylene*).  
 Methylpentadiene (*hexinene*).  
 $\beta$ -Methyl- $\alpha\delta$ -pentadiene (as -*methylallylethylene*, *hexinene*).  
 $\beta$ -Methylpentane (*hexane*).  
 Methylisoprene (*hexinene*).  
 $o$ -Methylisopropylbenzene.  
 1-Methyl-4-*isopropyl*cyclohexane.  
 Methylisopropylphenylacetylene.  
 Methylisopropylstyrene.  
 Myrcene.  
 Naphthalene.  
 Naphthenes.  
 $\beta$ -Naphthylisoeptylene.  
 Naphthylpropylenes.  
 Noninene.  
 Ocimene.  
 Octinene.  
 Octylenes.  
 Pentadecanaphthene.

**Hydrocarbons.** See:—

*cyclo*Pentadiene.  
 Pentamethylbenzene.  
 Pentane.  
*iso*Pentane.  
 Pentanthrene.  
 Pentinene.  
 Phellandrene.  
 Phenanthrene.  
 Phenyldiphenylene-ethane.  
*p*-Phenylenediethylene.  
 Phenyl*cyclo*hexane.  
 Phenylmethyleneethylene.  
 Phenylmethylfulvene.  
 $\alpha$ -Phenyl- $\beta$ -methylpropane.  
 $\alpha$ -Phenyl- $\beta$ -methyl- $\alpha$ -propylene.  
 $\alpha$ -Phenyl- $\gamma$ -methyl- $\alpha\gamma$ -tetradiene.  
 $\delta$ -Pinene.  
 Propane.  
*cyclo*Propane.  
*n*-Propylbenzene.  
 Propylene.  
 Propyl*cyclo*hexane (*propylhexamethyl-*  
*ene*).  
*iso*Propylidenecyclopentene.  
*p-iso*Propylphenylacetylene.  
*p-iso*Propylstyrene.  
*o-iso*Propyltoluene.  
 Stilbene.  
*iso*Stilbene.  
 Terpinene.  
 Tetradeacanaphthene.  
 Tetradecylacetylene.  
 Tetrahydronaphthalene.  
 Tetrahydrophenanthrene.  
 Tetraphenyl*cyclo*pentane.  
 Tetraphenyl*cyclo*pentene.  
 Thujene.  
*iso*Thujene.  
 Toluene.  
 Toluene.  
 Tridecanaphthene.  
 1:3:5-Trimethylbenzene.  
 3:4:4-Trimethyldihydrobenzene.  
 Trimethylene.  
 Trimethyl*cyclo*hexanes (*trimethylhexa-*  
*methylenes*).  
 $\beta\theta$ -Trimethyl- $\epsilon$ -nonene.  
 2:4:6-Trimethylphenylacetylene.  
 2:4:6-Trimethylstyrene.  
 Trimethyltrimethylenes.  
 Triphenylmethane.  
 Triphenylmethyl.  
 Tropilidene.  
 Undecanaphthene.  
 Undecinene.  
 Xylenes.  
*p*-Xylylene.

**Hydrocellulose** (MURUMOW, SACK, and  
 TOLLENS; TOLLENS), A., i, 453.  
 properties of (VIGNON), A.,  
 i, 16.

*iso***Hydrochelidonic acid** and its salts  
 (PINNER and KOHLHAMMER), A.,  
 i, 340.

**Hydrochloric acid.** See under Chlorine.  
**Hydrocinchonine** (JUNGFLEISCH and  
 LÉGER), A., i, 287, 338.

**Hydrocoumarone**, synthesis of (STOERMER  
 and KAHLERT), A., i, 536.

**Hydrocyanic acid.** See under Cyanogen.

**Hydrofluoric acid.** See under Fluorine.

**Hydrofluosilicic acid.** See under  
 Fluorine.

**Hydrogen**, atmospheric, origin of (GAU-  
 TIER), A., ii, 14, 92, 171, 232.

isolation of, from air (DEWAR), A.,  
 ii, 597.

liberation of, in the electrolysis of a  
 mixture of copper sulphate and  
 sulphuric acid (SAND), A., ii, 82.

evolution of, by the bacterial decom-  
 position of formic acid (PAKES and  
 JOLLYMAN), T., 386; P., 1901, 29.

production of, in igneous rocks (GAU-  
 TIER), A., ii, 171.

volume of, evolved by the action of  
 acids on granite (GAUTIER), A.,  
 ii, 14, 92.

spectrum of (LIVEING and DEWAR),  
 A., ii, 213; (TROWBRIDGE), A.,  
 ii, 633.

conductivity of (TOWNSEND and  
 KIRKBY), A., ii, 434.

liquefaction of (TRAVERS), A., ii, 379.  
 liquid and solid, physical properties  
 of (DEWAR), A., ii, 308, 597.

liquid, boiling point of, determined by  
 hydrogen and helium gas thermo-  
 meters (DEWAR), A., ii, 308.

direct union of, with carbon (BONE  
 and JERDAN), T., 1042; P., 1901,  
 162.

union of, with chlorine (MELLOR), T.,  
 216; P., 1900, 221.

diffusion of, through palladium (WIN-  
 KELMANN), A., ii, 646.

action of, on bismuth sulphide (PÉLA-  
 BON), A., ii, 165.

reaction of, with dry carbon dioxide  
 (BOUDOUARD), A., ii, 383.

behaviour of, towards silver (BERTHE-  
 LOT), A., ii, 97.

estimation of, in gas mixtures (PHIL-  
 LIPS), A., ii, 530.

**Hydrogen** arsenide. See Arsenic tri-  
 hydride.

bromide. See under Bromine.

chloride. See under Chlorine.

cyanide. See under Cyanogen.

fluoride. See under Fluorine.

iodide. See under Iodine.

triiodide, nature of (DAWSON), T., 238;  
 P., 1900, 215.

- Hydrogen peroxide** (MARCESE and WOLFFENSTEIN), A., i, 608.  
 formula of (v. BAEYER and VILLIGER), A., i, 63.  
 sensitiveness of, to light, in aqueous solution on addition of ferro- and ferri-cyanide (KISTIAKOWSKY), A., ii, 58.  
 catalysis of, by gold (BREDIG and REINDERS), A., ii, 442.  
 catalytic decomposition of, as affected by poisons (BREDIG and IKEDA), A., ii, 441; (RAUDNITZ), A., ii, 496; (BREDIG), A., ii, 596.  
 catalysis in the reaction between hydriodic acid and (BRODE), A., ii, 443; (MANCHOT and WILHELMS), A., ii, 658.  
 action of, on fatty amines (MAMLOCK and WOLFFENSTEIN), A., i, 673.  
 action of, on tertiary bases (AUERBACH and WOLFFENSTEIN), A., i, 613.  
 and sodium carbonate, action of, on silver nitrate (v. BAEYER and VILLIGER), A., ii, 654.  
 action of, on silver oxide (v. BAEYER and VILLIGER), A., ii, 315, 654; (BERTHELOT), A., ii, 383.  
 action of, on thiosulphates (NABL), A., ii, 16, 94.  
 action of, on blood (COTTON), A., ii, 295.  
 as an antidote for hydrocyanic acid poisoning (HERTING), A., ii, 535.  
 detection of calcium oxalate in commercial (ARTH), A., ii, 622.  
 estimation of solutions of (NAYLOR and DYER), A., ii, 686.
- Hydrogen peroxides**, higher (BACH), A., ii, 14, 447.  
 non-existence of (RAMSAY), T., 1324; P., 1901, 197.
- Hydrogen phosphide** (*phosphine*), heat of formation of (DE FORCRAND), A., ii, 641.
- Hydrogen sulphide**, method for obtaining a saturated aqueous solution of, or a constant supply of the gas (PERKIN), A., ii, 447.  
 apparatus, improvement of Küster's (FRERICHS), A., ii, 311.  
 formation of, in sewers (BAYERINCK), A., ii, 119.  
 action of, on boron bromide (STOCK and POPPENBERG), A., ii, 237; (STOCK and BLIX), A., ii, 650.  
 impermeability of skin and external mucous membranes to (CHAUVEAU and TISSOT), A., ii, 611.  
 analysis of mixtures of carbonyl sulphide, carbon dioxide and (HEMPEL), A., ii, 651.
- Hydrogen sulphide**, estimation of, in illuminating gas (TUTWILLER), A., ii, 421.
- Hydrogen telluride** (ERNYEI), A., ii, 94.
- Hydrogenation** with sodium and alcohol (LADENBURG), A., i, 181.  
 direct, in the presence of reduced nickel (SABATIER and SENDERENS), A., i, 195.
- Hydrolysis**. See Affinity.
- Hydromagnesite** from British Columbia (HOFFMANN), A., ii, 320.
- Hydrouracil** (TAFEL and WEINSCHENK), A., i, 72; (TAFEL), A., i, 194.
- Hydrouracils**, synthesis of (FISCHER and ROEDER), A., i, 294.
- Hydroxamic acids**, formation of (ANGELICO and FANARA), A., i, 708.
- Hydroxyacetophenone**, amino- and  $\omega$ -chloroamino- (KUNCKELL), A., i, 214.
- m*-**Hydroxyacetophenone** and its methyl ester (RUPE and v. MAJEWSKI), A., i, 104.
- Hydroxyacetylpaconol**, Nagai's, constitution of (v. KOSTANECKI and LLOYD), A., i, 736.
- Hydroxy-acids**,  $C_7H_7O_5$ , and  $C_8H_7O_5$ , and their diamides and barium salts, from pilopile and homopilopile acids (JOWETT), T., 1337; P., 1901, 198.  
 electrolysis of (HAMONET), A., i, 187.  
 action of formaldehyde and benzaldehyde on (ALBERDA VAN EKENSTEIN), A., i, 120.  
 action of iodine on the silver salts of (HERZOG and LEISER), A., i, 499.
- $\beta$ -Hydroxyacrylic acid**,  $\alpha$ -cyano-, and their alkyl derivatives, action of ammonia and aniline on (DE BOLLEMONT), A., i, 131.  
 esters and salts of (DE BOLLEMONT), A., i, 116, 117.
- Hydroxyamidines** (LEY), A., i, 759.
- 2-Hydroxy-3-*o*-amino- and 3-*o*-hydroxyphenylquinoxaline** and its sulphonic acid and salts, and their 6 (or 7)-methyl derivatives (MARCHLEWSKI and SOSNOWSKI), A., i, 415.
- 7-Hydroxyanthydro-2:4-dimethyl-1:4-benzopyranol** and its acetyl derivative, hydrochloride and picrate (BÜLOW and WAGNER), A., i, 400.
- 5-Hydroxy-6-anilino- $\alpha$ - $\beta$ -naphthaphenazine** and its diacetyl derivative (LINDENBAUM), A., i, 424.
- $\alpha$ -Hydroxyanisylidenacetophenone** and bromo- (POND and SHOFFSTALL), A., i, 36.
- Hydroxyazoaldehydes** (BORSCHÉ and BOLSER), A., i, 572.

- Hydroxyazobenzene**, barium salt, hydrolytic dissociation of (FARMER), T., 866; P., 1901, 129.
- o*-**Hydroxyazobenzene**, synthesis of (BAMBERGER), A., i, 107.
- Hydroxyazo-colouring matters**, sulphonated, and their salts (SISLEY), A., i, 775.
- Hydroxyazo-compounds**, constitution of (McPHERSON and GORE), A., i, 572; (ORNDORFF and THEBAUD), A., i, 774.
- p*-**Hydroxyazo-compounds**, structure of, and condensation of, with benzhydrols (MOHLAU and KEGEL), A., i, 56.
- m*-**Hydroxy-*o*-azotoluene**, *p*-diamino-, and its sulphate (ELBS and SCHWARZ), A., i, 619.
- o*-**Hydroxybenzaldehyde** resorcinol- and quinol-carbohydrazones (EINHORN and ESCALES), A., i, 653.
- p*-**Hydroxybenzaldehyde**, condensation of, with isobutaldehyde (HILDESHEIMER), A., i, 645.
- o*-**Hydroxybenzeneazo-*p*-toluene** (BAMBERGER), A., i, 107.
- o*-**Hydroxybenzoic acid**. See Salicylic acid.
- m*-**Hydroxybenzoic acid**, methyl ester (MEYER), A., i, 629.
- p*-**Hydroxybenzoic acid**, action of chlorine on (TARUGI), A., i, 146.
- 1-Hydroxy-2-benzoylcamphene** and its isomeride, and acetyl, metallic and phenylurethane derivatives; and crystalline form (FORSTER), T., 994; P., 1901, 167.
- o*-**Hydroxybenzoylformic acid** and its sodium salt (MARCHLEWSKI and SOSNOWSKI), A., i, 615.
- 4-Hydroxybenzyl alcohol**, 3-chloro- and 3-nitro-, and their chlorides (STOERMER and BEHN), A., i, 726.
- 2-Hydroxybenzylacetophenone** and its reduction (FEUERSTEIN and MUSCULUS), A., i, 279.
- Hydroxybenzylbenzylideneindene** and its chloro-derivative (THIELE), A., i, 76.
- β*-**Hydroxybenzylglutaric acid** and its barium salt (FICHTER and SCHIESS), A., i, 545.
- o*-**Hydroxybenzylideneacetylpipecrone** (FEUERSTEIN and HEIMANN), A., i, 465.
- o*-**Hydroxybenzylideneaminophenylguanidine** nitrate, picrate, and platinum-chloride (PELLIZZARI and RICKARDS), A., i, 769.
- o*-**Hydroxybenzylideneaniline** and its bromo-derivatives (HANTZSCH and SCHWAB), A., i, 379.
- condensation of (SCHWAB), A., i, 380.
- p*-**Hydroxybenzylidenebarbituric acid** and its potassium salt (WEINSCHENK), A., i, 528.
- o*-**Hydroxybenzylidenebenzamidine** and its salts (KUNCKELL and BAUER), A., i, 759.
- Hydroxybenzylidene coumaranones**, 1-*o*- and 1-*p*-, syntheses of, and their 4-, 5-, and 6-methyl derivatives (STOERMER and BARTSCH), A., i, 94.
- Hydroxybenzylideneindanones**, *o*-, *m*-, and *p*- (FEUERSTEIN), A., i, 279.
- o*-**Hydroxybenzylidene-*o*-phenetidine** and *-o*-toluidine (JACOBSON and STEINBRECK), A., i, 380.
- o*-**Hydroxybenzylidenephényl glycol-hydrazide** (CURTIUS and MULLER), A., i, 779.
- p*-**Hydroxybenzylidene-*o*- and *p*-toluidinesulphonic acids**, sodium salts (WALTER), A., i, 694.
- o*-**Hydroxybenzylidene-*o*-xylylenehydrazine** (FRANKEL), A., i, 45.
- α*-**Hydroxyisobutaldehyde**, condensation of, with acetaldehyde (ROESLER), A., i, 669.
- action of sodium hydroxide on (FRANKE), A., i, 188.
- α*-**Hydroxy-*β*-butenoic acid**, and its amide, nitrile, ethyl ester, dibromo-derivatives and decomposition products (VAN DER SLEEN), A., i, 499.
- β*-**Hydroxybutylphenylthiocarbamide** (STRAUSS), A., i, 17.
- β*-**Hydroxybutyric acid**, estimation of, in urine (BERGELL), A., ii, 701.
- α*-**Hydroxyisobutyric acid**, bimolecular anhydride of (EINHORN and PREIFFER), A., i, 712.
- 1-Hydroxycamphene**, and the action of sulphuric acid on (FORSTER), T., 651; P., 1901, 86.
- α*-**Hydroxycamphorcarboxylic acid**, and the action of heat on, and its amide and acetyl derivative (LAPWORTH and CHAPMAN), T., 382; P., 1901, 28.
- β*-**Hydroxycamphoric acid** (LAPWORTH and LENTON), P., 1901, 148.
- 3-Hydroxycarbazole** and its diacetyl derivative (RUFF and STEIN), A., i, 620.
- 6-Hydroxy-5-carboxylamino-2-picoline-3-carboxylic acid** (ERRERA), A., i, 43.
- p*-**Hydroxycarboxyphenylhydrazonocyanooacetic acid**, ethyl ester (LAX), A., i, 231.
- 7-Hydroxychromone** (v. KOSTANECKI, PAUL, and TAMBOR), A., i, 735.
- 7-Hydroxycoumarone-3-carboxylic acid** (*umbelliferone-3-carboxylic acid*) and its ethyl ester (v. PECHMANN and GRAEGER), A., i, 287.

- 7-Hydroxycoumarone-4-carboxylic acid**, and its esters; and its acyl and 8-bromo-derivatives and their ethyl esters (V. PECHMANN and GRAEGER), A., i, 286.
- $\alpha$ -Hydroxycyanocamphor** (LAPWORTH and CHAPMAN), T., 381; P., 1901, 28.
- Hydroxycytisine** and its salts and acetyl derivative, and the action of sulphurous acid on (FREUND and FRIEDMANN), A., i, 288.
- $\pi$ -Hydroxydihydrocampholytic acid** (NOYES and BLANCHARD), A., i, 664.
- Hydroxydiketohydrindenecarboxylic acid**, ethyl ester (FLATOW), A., i, 543.
- 5-Hydroxy-7:2'-dimethoxy- and -diethoxy-flavones** and their acetyl derivatives (V. KOSTANECKI and WEBEL), A., i, 479.
- Hydroxydimethylbutanetricarboxylic acids**, lactones of (PERKIN and THORPE), T., 764; P., 1900, 150; 1901, 111.
- 7-Hydroxy-2:3-dimethylchromone** and its acetyl derivative (V. KOSTANECKI and LLOYD), A., i, 736.
- Hydroxydimethylcoumarin**, 3-chloro-, and its acetyl and benzoyl derivatives (V. PECHMANN and HANKE), A., i, 210.
- $\alpha$ -Hydroxy- $\beta\beta$ -dimethylglutaric acid**, lactone of (PERKIN and THORPE), T., 758; P., 1901, 113.
- $\alpha$ -bromo-, lactone of, and ethyl ester** (PERKIN and THORPE), T., 755; P., 1901, 112.
- $\beta$ -Hydroxy- $\alpha\alpha$ -dimethylpropaldehyde**, action of potassium hydroxide on (WESSLEY), A., i, 256.
- 6-Hydroxy-2:4-dimethylpyridine**, 3- and 5-cyano- (MOIR), P., 1901, 69.
- 6-Hydroxy 4:5-dimethylpyrimidine** and its salts (SCHLENKER), A., i, 764.
- $\beta$ -Hydroxy- $\alpha\alpha$ -dimethylvaleric acid**, synthesis, properties, and salts of (SCHISCHKOWSKY and REFORMATSKY), A., i, 311.
- Hydroxydinaphthaphenazine oxide**, bromo- and amino-, and the ethyl derivative of the amino-compound (LINDENBAUM), A., i, 424.
- 1-Hydroxydiphenyl acetate** (HÖNIG-SCHMID), A., i, 700.
- Hydroxydiphenylacetic acid**. See Benzilic acid.
- 4'-Hydroxydiphenylamine-6-carboxylic acid**, 2:4-dinitro-, and its salts, and acetyl and benzoyl derivatives (COHN), A., i, 642.
- 7-Hydroxy-2:4-diphenylbenzodihydropyran** and its acetyl derivative (BÜLOW and V. SICHERER), A., i, 604.
- 7-Hydroxy-2:4-diphenyl-1:4-benzopyranol** and its salts, and 2:3-dibromo- and 8-nitroso- (BÜLOW and V. SICHERER), A., i, 603.
- $\beta$ -Hydroxydiphenylethane**, 2:4'-dinitro- $\alpha$ -cyano- (FREUND), A., i, 690.
- 2-Hydroxydiphenylsulphone** (ULLMANN and PASDERMADJIAN), A., i, 383.
- 2-Hydroxy-4-ethoxybenzoylpyruvic acid**, ethyl ester (V. KOSTANECKI, PAUL, and TAMBOR), A., i, 735.
- 2-Hydroxy-7-ethoxy-3-*o*-hydroxyphenylquinoxaline** (MARCHLEWSKI and SOSNOWSKI), A., i, 615.
- 1-Hydroxy-3-ethylamino-5:6:7:8-tetrachloroanthraquinone** (HALLER and UMBGROVE), A., i, 644.
- Hydroxyethylaminoformic acid**, methyl and ethyl esters (FRANCHIMONT and LUBLIN), A., i, 674.
- Hydroxy-2-ethylchromones**, 6- and 7-, and their acetyl derivatives (V. KOSTANECKI and TAMBOR), A., i, 558.
- Hydroxyethyl-dipropylamine, -diisobutylamine, and -diisamylamine** and their picrates and picrolonates (MATTHES), A., i, 513.
- Hydroxyethylglutaric acid** and its salts (FITTIG and ROTH), A., i, 121.
- $\gamma$ -Hydroxyethylmalonic acid**, ethyl esters, lactone of. See Butyrolactone-carboxylic acid.
- Hydroxyethylnitrocarbamide** (FRANCHIMONT and LUBLIN), A., i, 674.
- Hydroxyethyl-propylamines, -*n*- and -*iso*-butylamines, -*iso*amylamine, -heptylamine, and -hexylamine**, and their salts and picrolonates (MATTHES), A., i, 259.
- Hydroxyfenchenic acids**, isomeric, and their acetyl derivatives (WALLACH and NEUMANN), A., i, 333.
- 3'-Hydroxyflavone** and its acetyl derivative (V. KOSTANECKI and TAMBOR), A., i, 558.
- 2-Hydroxyfluorene** and its  $\pi$ -potassium salt and **2-Hydroxyfluorenone** (DIELS), A., i, 522.
- $\gamma$ -Hydroxycycloheptanecarboxylolactone** (WILLSTÄTTER), A., i, 224.
- Hydroxyhexahydrobenzylamine derivatives** (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 692.
- Hydroxyhexahydroxylic acids**, and their lactones (LEES and PERKIN), T., 344; P., 1898, 111; 1900, 18; (PERKIN and YATES), T., 1373.
- p*-Hydroxyhydratropic acid** and its esters and derivatives (BOUGAULT), A., i, 389.
- Hydroxyhydrindene**, amino- and nitro- (DÜNKELSBÜHLER), A., i, 44.



- 4-Hydroxyhydrindene** (MOSCHNER), A., i, 374.
- 2-Hydroxy-3-*o*-hydroxyphenylquinoxaline** (MARCHLEWSKI and SOSNOWSKI), A., i, 415, 615.
- 8-Hydroxy- $\alpha$ -hydroxyisopropylhexoic acid.** See Cinogenic acid.
- Hydroxyketodihydrocyclogeranic acid** (TIEMANN and TIGGES), A., i, 158.
- 6-Hydroxy-2-keto-3:4:4-trimethylhexamethylene, 1:6-dibromo-** (CROSSLEY), T., 146; P., 1900, 91.
- $\kappa$ -Hydroxy- $\iota$ -ketoundecioic acid,** and its potassium salt, and semicarbazone and acetate (THOMS and FENDLER), A., i, 187.
- Hydroxylamine,** action of, on the anhydrides of bromonitrocamphane (FORSTER), T., 653; P., 1901, 88.  
action of, on oxalacetic acid (FENTON and JONES), T., 94; P., 1900, 205.  
combination of, with ketones (PETRENKO-KRITSCHENKO and LORD-KIPANIDŽÉ), A., i, 505.  
hydriodide (WOLFENSTEIN and GROLL), A., ii, 551.  
estimation of, in presence of ammonia and nitrite (SULER), A., ii, 637.
- Hydroxylamines,** new synthesis of (MOUREU), A., i, 317.  
 $\beta$ -aromatic, action of methyl on the velocity of reaction of the (BAMBERGER and RISING), A., i, 529.  
 $\beta$ -substituted, formation of (DUNSTAN and GOULDING), T., 629; P., 1901, 84.
- Hydroxylaminoisobutyric acid,** ethylimino-ether, and amidine of (PILOTY and SCHWERIN), A., i, 517.
- Hydroxymaleic anhydride,** pyridine salt of (WOHL and OESTERLIN), A., i, 365.
- Hydroxymercuribenzoic acid** and anhydride, constitution of (PESCI), A., i, 576.
- p*-Hydroxy-*m*-methoxybenzylideneindanone** (FEUERSTEIN), A., i, 279.
- 1-Hydroxy-3-methoxycarbonyl-4-aminoxenol** (BOSSE), A., i, 207.
- 5-Hydroxy-3-methoxy-*p*-xyloquinone** and its 4-oxime and its salts (BOSSE), A., i, 207.
- $\beta$ -Hydroxy- $\alpha$ -methylbutyric acid** and its ethyl ester, and ester anhydride (KROMER), A., i, 629.
- 7-Hydroxy-2-methylchromone,** and its acetyl derivative (v. KOSTANECKI and RÓŻYCKI), A., i, 223.
- 5-Hydroxy-7-methyldiketohydrindene.** See Carminone.
- Hydroxymethylenecamphor-phosphinic acid** and -oxychlorophosphine (MICHAELIS and FLEMMING), A., i, 439.
- Hydroxymethylenecyanoacetic acid.** See  $\beta$ -Hydroxyacrylic acid,  $\alpha$ -cyano.
- Hydroxymethylenedihydroisophorone** (FARBWERKE VORM. MEISTER, LUCIUS, - and BRÜNING), A., i, 692.
- Hydroxymethyleneglutaconic acid.** See Formylglutaconic acid.
- Hydroxymethylhexahydrobenzylaniline** (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 693.
- 8-Hydroxy- $\alpha$ -methylhexoic acid,** barium salt (MOHR), A., i, 364.
- 2-Hydroxy-1-methyl-3-ketophenylpropenyl-5-benzeneazobenzene,** and its sodium sulphate (BORSCHTE and BOLSER), A., i, 573.
- Hydroxymethyl-4-methylcoumarone** (v. PECHMANN and HANKE), A., i, 211.
- Hydroxymethylmethylenecyclohexanone** (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 692.
- 5-Hydroxy-12-methylisnaphthaphenazonium-3-sulphonic acid,** 10-chloro- (KEHRMANN and MÜLLER), A., i, 420.
- 2-Hydroxy-5-methylolbenzaldehyde** and its ether, azine, and chloro-derivative (STOERMER and BEHN), A., i, 726.
- 4-Hydroxy-1-methylphenylmercuric salts** (DIMROTH), A., i, 440.
- Hydroxymethylisopropylhexahydrobenzyl-amines, -aniline, -dimethylamine,** and -ethylamine (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 692.
- 3-Hydroxymethylpyridine** and its salts (DEHNEL), A., i, 164.
- $\beta$ -Hydroxy- $\alpha$ -naphthaldehyde,** and its oxime, phenylhydrazone, and hydramides (FOSSE), A., i, 328.  
combination of, with camphor (HELBRONNER), A., i, 600.
- 5-Hydroxy- $\alpha\beta$ -naphthaphenazine,** 6-bromo-, and its salts, acetyl derivative and ethyl ether (LINDENBAUM), A., i, 423.
- 6-Hydroxynaphthaphenazine,** 5-amino-, and its acetyl derivative (KEHRMANN and BARCHÉ), A., i, 48.
- 2-Hydroxy-1:4-naphthaquinone,** 7-amino-, and its imide (KEHRMANN and STEINER), A., i, 102.  
8-amino-, and its acetyl derivative (KEHRMANN and MISSLIN), A., i, 423.
- 8-Hydroxy- $\alpha$ -naphthylamine-4-sulphonic acid** and its sulphurous ether (BADISCHE ANILIN- and SODA-FABRIK), A., i, 699.

- 1-Hydroxynicotinic acid**, methyl ester (MEYER), A., i, 629.
- 6-Hydroxy-2-*p*-nitrophenylpyrimidine-4-carbo-*p*-nitrobenzamidine** (RAPPEPORT), A., i, 568.
- Hydroxyoxamide**, reactions of (PICKARD and CARTER), T., 842; P., 1901, 123.
- 7-Hydroxy-2-phenylanhydro-4-methyl-1:4-benzopyranol** and its salts, acetyl derivative, methyl ether and anhydrobase (BÜLOW and WAGNER), A., i, 559.
- Hydroxyphenylcinnamic acid** and its phenyl ester (BAKUNIN), A., i, 84.
- o*-Hydroxyphenylethyl alcohol** and its mono- and di-urethane, and bromide (STOERMER and KAHLERT), A., i, 535.
- 2- $\beta$ -Hydroxy- $\beta$ -phenylethyl-5-ethylpyridine**, *p*-nitro-, and its salts (BACH), A., i, 610.
- 5- $\beta$ -Hydroxy- $\beta$ -phenylethyl-2-ethylpyridine**, and *o*-nitro- and *o*-amino-, and their salts (CASTNER), A., i, 562.
- 2- $\beta$ -Hydroxy- $\beta$ -phenylethylpyridine** (BACH), A., i, 610.  
and *o*-amino- and *o*-nitro-, and their salts (ROTH), A., i, 165.
- Hydroxyphenylmercuric salts** (DIMROTH), A., i, 440.
- 7-Hydroxy-2-phenyl-4-methylbenzopyran** and its acetyl derivative (BÜLOW and WAGNER), A., i, 559.
- 6-Hydroxy-2-phenyl-4-mono- and -4:5-dimethyl-, -4:5-methylethyl-, and -5:4-benzylmethyl-pyrimidines**, and their *p*-nitro- and *p*-amino-derivatives (RAPPEPORT), A., i, 567.
- Hydroxyphenylmethyluracil**, dibromo- (BEHREND, MEYER, and BUCHHOLZ), A., i, 137.
- 6-Hydroxy-3-phenyl- $\psi$ -phenanthroline** and its 2-carboxylic acid, and 6-bromo-, 6-chloro- and 6-iodo-derivatives (WILLGERODT and JABLONSKI), A., i, 50.
- 6-Hydroxy-2-phenylpyrimidine-4-carboxylic acid**, *p*-nitro-, and its salts (RAPPEPORT), A., i, 569.
- p*-Hydroxyphenyl-*m*-tolylamine**, *p*-amino-, and its sulphonic acid (FARBWERKE VORM. MEISTER, LUCIUS, and (BRÜNING), A., i, 755.
- Hydroxyisophthalic acid** (LAWRENCE and PERKIN), P., 1901, 47.
- 6-Hydroxy-2-picoline**, and 3:5-dibromo-, and its 3:5-dicarboxylic acid (ERRERA), A., i, 43.
- 6-Hydroxy-2-picoline-3-carboxylic acid**, 5-cyano-, ethyl ester, and its potassium salt (ERRERA), A., i, 43.
- Hydroxypilocarpinic acid**, salts of (JOWETT), T., 596; P., 1901, 57.
- Hydroxypivalic acid** (WESSELY), A., i, 256.
- $\beta$ -Hydroxypropaldehyde**,  $\alpha$ -chloro-. See Glycerlaldehyde chlorohydrin.
- $\alpha$ -Hydroxypropionic acid**. See Lactic acid.
- $\alpha$ -Hydroxy- $\alpha$ -*n*- and *iso*-propoxy- $\beta\beta\beta$ -trichloroethanes** (*chloral propylates*) (GABUTTI), A., i, 367.
- 2-Hydroxy-5-isopropyl-1:4-benzoquinone**, 3:6-dibromo- (HOFFMANN), A., i, 474.
- 7-Hydroxy-2-propylchromone**, and its acetyl derivative (v. KOSTANECKI, TAMBOR, and WINTER), A., i, 559.
- $\alpha$ -Hydroxyisopropylhexoic acid**,  $\delta$ -bromo- (RUPE and RONUS), A., i, 578.
- $\gamma$ -Hydroxypropylmalonic acid**,  $\delta$ -dichloro-, lactone of. See  $\gamma$ -Valerolactone- $\alpha$ -carboxylic acid,  $\delta$ -chloro-.
- $\beta$ -Hydroxypropyl-3-methylpyrazolone**, 4- $\gamma$ -chloro- (TRAUBE and LEHMANN), A., i, 502.
- 2-Hydroxy- $\beta$ -*p*-isopropylphenylethylpyridine** and its salts (BACKE), A., i, 562.
- $\beta$ -Hydroxypropylphenylthiocarbamide** (STRAUSS), A., i, 17.
- Hydroxyquinol** and *tribromo*-, *dibromo*-, *nitro*-, and *nitro*-, *tribenzoyl* and *triacetyl* derivatives (THIELE and JAEGER), A., i, 701.  
*triethyl ether*. See 1:2:4-Triethoxybenzene.  
See also 1:2:4-Trihydroxybenzene.
- Hydroxyquinolcarboxylic acid** and its triacetyl derivative (THIELE and JAEGER), A., i, 701.
- Hydroxyquinoline**, chloroiodo- (BASLER CHEMISCHE FABRIK), A., i, 750.
- 2-Hydroxyquinoline**. See Carbostyryl.
- 4-Hydroxyquinoline**. See Kynurin.
- 4-Hydroxyquinoline-2-carboxylic acid** (CAMPS), A., i, 751.
- 4-Hydroxyquinoline-3-carboxylic acid**. See Kynurenic acid.
- 7-Hydroxy-2-quinolone-4-acetic acid** and its ethyl ester (BESTHORN and GARBEN), A., i, 97.
- Hydroxyquinolphthalein**. See Dihydroxyfluorescein.
- 4-Hydroxy-*o*-quinone** bisphenylhydrazone (ORNDORFF and THEBAUD), A., i, 775.
- Hydroxyroccelic acid** (HESSE), A., i, 596.
- m*-Hydroxysulphobenzoic acid**, *p*-amino-, methyl hydrogen ester, and its salts (JACOB), A., i, 31.
- Hydroxytetrahydrofurfuran-2:5-dicarboxylic acid**,  $\alpha$ -chloro- (HILL and WHEELER), A., i, 556.

- 4-Hydroxy-2:2:6:6-tetramethylpiperidine** (*triacetonealkamine*), stereoisomeric phenylcarbamides of (GROSCHUFF), A., i, 745.
- 3-Hydroxytetramethylpyrrolidine** (PAULY and BOEHM), A., i, 607.
- Hydroxytolualdehyde**,  $\omega$ -bromo- (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 727.
- haloid derivatives, condensation of, with amines (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 713.
- condensation products of, with phenols (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 712.
- 2-Hydroxy-*m*-tolualdehyde**, 5-bromo-, and its phenylhydrazone, and **2-Hydroxy-*m*-toluic acid** and its barium salt (BORSCHKE and BOLSER), A., i, 573.
- Hydroxytoluic acid**, haloid derivatives, condensation of, with amines (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 713.
- condensation products of, with phenols (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 712.
- p*-Hydroxytolylidiphenylacetic acids**, and lactones and bromolactones of the *m*- and *p*-acids, and diacetyl derivative of the *m*-acid (BISTRZYCKI and NOWAKOWSKI), A., i, 717.
- Hydroxytriazoles** and their **sulphonic acids**, preparation of (OEHLER), A., i, 768.
- Hydroxytrimethylhexahydrobenzyl-aniline** (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 692.
- 4-Hydroxy-2:6:6-trimethylpiperidine** ( $\alpha$ -*vinyl*diacetonealkamine), and its stereoisomeric phenylcarbamides and their hydrochlorides (GROSCHUFF), A., i, 745.
- p*-Hydroxytriphenylacetic acid** and its salts and *di*bromo- and nitro-derivatives (BISTRZYCKI and NOWAKOWSKI), A., i, 716.
- p*-Hydroxytriphenylacetic acetic anhydride**, *di*bromo- (BISTRZYCKI and NOWAKOWSKI), A., i, 717.
- p*-Hydroxytriphenylcarbinol**, and its acetyl, benzoyl and *di*bromo-derivatives (BISTRZYCKI and HERBST), A., i, 701.
- p*-Hydroxytriphenyl ether** and its acetyl derivative and its *di*bromo-compound (BISTRZYCKI and HERBST), A., i, 702.
- N*-Hydroxytripropylsulphamic anhydride** (MAMLOCK and WOLFFENSTEIN), A., i, 673.
- Hydroxytrisdiketohydrindene** and its isomeride (LIEBERMANN and LANDAU), A., i, 552.
- Hydroxytrimethoxycarminonecarboxylic acid** and its methyl ester (LIEBERMANN and LANDAU), A., i, 545.
- $\omega$ -Hydroxyundecylic acid** (WALKER and LUMSDEN), T., 1193.
- $\delta$ -Hydroxy- $\gamma$ -valerolactone- $\alpha$ -carboxylic acid**, ethyl ester (TRAUBE and LEHMANN), A., i, 502.
- Hyoscyne** and  $\psi$ -**Hyoscyamine** from mandragora root (HESSE), A., i, 741.
- Hyoscyamine** from *Hyoscyamus muticus* and *Datura Stramonium* grown in Egypt (DUNSTAN and BROWN), T., 71; P., 1900, 207.
- conversion of, into atropine (MAZZUCHELLI), A., i, 161.
- relation of, to atropine (GADAMER), A., i, 605.
- Hyper-acids**, thermochemistry of (PISSARJEWSKY), A., ii, 56.
- Hypersthene** from Ceylon (COOMÁRA-SWÁMY), A., ii, 171.
- Hyphomicrobium**, assimilation of carbon-dioxide by (STUTZER), A., ii, 267.
- Hypochlorous acid**. See under Chlorine.
- Hypophosphorous acid**. See under Phosphorus.

## I.

- Ianthone**, and its isomeride (DURAND, HUGUENIN & Co. and PHILIPPE BARBIER), A., i, 727.
- Ichthulin** and **Ichthulic acid** from cod (LEVENE), A., i, 433.
- Imbricatic acid** from lichens (ZOFF), A., i, 547.
- Imidosulphites** (DIVERS and OGAWA), T., 1099; P., 1900, 113; 1901, 163.
- Iminazoles**. See Glyoxalines.
- Imino-ethers**, formation of (LANDER), T., 690; P., 1901, 59.
- aliphatic, preparation of, from amides (LANDER), T., 701; P., 1901, 61.
- Iminopyrine** (MICHAELIS and GUNKEL), A., i, 352.
- Inanition**, proteid katabolism in (VORR), A., ii, 459.
- cause of the increase of proteid decomposition during (KAUFMANN), A., ii, 254; (SCHULZ), A., ii, 562.
- excretion of phosphorus during (SCHULZ and MAINZER), A., ii, 407.
- Incineration**, apparatus and method for exact (WISLICENUS), A., ii, 622.
- Indacene** and its derivatives (EPHRAIM), A., i, 688.

- Indanedione** (*diketohydrindene*), derivatives of (NÖLTING and BLUM), A., i, 728.
- Indazole** and chloro-, and acetyl and nitroso-derivatives of the chloro-compound (FISCHER and SEUFFERT), A., i, 411.
- Indene**, condensation products of (THIELE), A., i, 76.
- Indeneoxalic acid** (THIELE), A., i, 76.
- Indene-resins** (KRAEMER and SPILKER), A., i, 557.
- Indiarubber**. See Caoutchouc.
- Indiazoneoxime** and its dibromo- and dichloro-derivatives (BAMBERGER and DEMUTH), A., i, 391.
- Indican**, detection of, in urine containing iodides (KÜHN), A., ii, 487.  
estimation of, in urine (BOUMA), A., ii, 487.  
estimation of, in urine, and its clinical significance (WOŁOWSKI), A., ii, 293.
- Indicanuria**, the urine in (KOBERT), A., ii, 68.
- Indicator**, new, for determining the acidity of wines, &c. (RUNYAN), A., ii, 629.  
ferrisalicylic acid as an (GEROCK), A., ii, 190.
- Indicators**, acid and alkali, classification of (WAGNER), A., ii, 419.  
for use with artificial light (KUFFERATH), A., ii, 684.  
action of vegetable alkaloids on certain (ASTRUC), A., i, 604.
- Indigo** and its derivatives, preparation of, from phenylglycine-*o*-carboxylic esters (CHEMISCHE FABRIK VON HEYDEN), A., i, 714.  
conversion of anthranilic acid derivatives into (ERDMANN), A., i, 536.
- Indigos**, commercial, estimation of, colorimetrically (VAUBEL), A., i, 715.
- Indigo-blue**, and **Indigo-red**, molecular weight of (VAUBEL), A., i, 714.
- Indigo-carmine**, constitution of (VORLÄNDER and SCHUBART), A., i, 564.
- Indigofera tinctoria**, organic iron compounds in (SUZUKI), A., ii, 678.
- Indigotin** and its N-alkyl derivatives, preparation of (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 714.  
reduction of, in an anhydrous medium (BINZ), A., i, 593; (HABER), A., ii, 638.
- Indigo-white**, oxidation of, with oxygen (MANCHOT and HERZOG), A., i, 565.  
condensation of, with formaldehyde (BADISCHE ANILIN- and SODA-FABRIK), A., i, 715.
- Indigo-white**, acyl derivatives of (VORLÄNDER, DRESCHER, and TELLER), A., i, 563.
- Indirubin**, indoxyl origin of (MAILLARD), A., ii, 407.
- Indium** (CHABRIÉ and RENGADE), A., ii, 242.  
atomic weight of (BENOIST), A., ii, 308.  
position of, in the classification of the elements (CHABRIÉ and RENGADE), A., ii, 102.
- Indium trichloride**, double salt of, with rubidium chloride (KLEY), A., ii, 626.  
hydroxide and molybdate (RENZ), A., ii, 657.  
sulphate, double salts of, with caesium and rubidium sulphates (CHABRIÉ and RENGADE), A., ii, 102.
- Indium organic compounds**:—  
platinocyanide (RENZ), A., ii, 657.
- Indium, detection and estimation of**:—  
microchemical test for (KLEY), A., ii, 626.  
estimation of (RENZ), A., ii, 657.
- Indiumacetylacetone** (CHABRIÉ and RENGADE), A., ii, 103.
- Indoles**, formation of 3-nitro- from the 3-nitroso-derivatives (ANGELI and ANGELICO), A., i, 45.
- Indophenols**, absorption spectra of (LEMOULT), A., i, 232; (BAYRAC and CAMICHEL), A., i, 296; (CAMICHEL and BAYRAC), A., i, 296; ii, 297.
- Indoxyl** and **Indoxyl acid**, acetyl derivatives of (VORLÄNDER, DRESCHER, and TELLER), A., i, 563.
- Indoxyl derivatives**, detection of (VORLÄNDER and MEUSEL), A., i, 83.
- Inesite** from Mexico (CUMMINGS), A., ii, 65.
- Infants**, new-born, composition of, and of their ash (CAMERER and SÖLDNER), A., ii, 173; (DE LANGE), A., ii, 174.  
mineral composition of (HUGOUENENQ), A., ii, 405.  
See also Children.
- Infracamphenamide**, its oxidation, and dibromide and hydrobromide (FORSTER), T., 117; P., 1900, 211.
- Infracampholene**, amino-, and its salts, and benzoyl, carbamide and phenyl-carbamide derivatives (FORSTER), T., 119; P., 1900, 211.
- Infracampholenic acid** and its salts and dibromide (FORSTER), T., 103; P., 1900, 211.
- Inorganic chemistry**, plea for the more efficient study of (WINKLER), A., ii, 232.

**Internal friction.** See Viscosity.

**Intestine,** absorption in the (HÖBER), A., ii, 610.

small and large, absorption in the (REACH), A., ii, 667.

small, digestion in the (KUTSCHER and SEEMANN), A., ii, 667.

**Intestinal putrefaction,** influence of urotropine on (LOEBISCH), A., ii, 667.

**Intracellular juices,** apparatus for obtaining (ROWLAND), A., ii, 613.

**Intramolecular migration** and its explanation based on the intramolecular mobility of multivalent elements (ERLENMEYER), A., i, 357.

rearrangement of *isoaldoxime* ethers (WEGENER), A., i, 152.

**Inulin** as a stimulant of gastric secretion (MARK-SCHNORF), A., ii, 402.

**Invariants.** theory of (GORDAN and ALEXÉEFF), A., ii, 13; (STUDY), A., ii, 497.

**Inversion** of cane-sugar. See Affinity. of the optically active *ac*-tetrahydro- $\beta$ -naphthylamines prepared by the aid of *d*- and *l*-bromocamphorsulphonic acids (POPE and HARVEY), T., 74; P., 1900, 206.

**Invertase** from yeast (SALKOWSKI), A., i, 180.

action of chemical agents on (BOKORNY), A., ii, 438, 568.

**Invertebrates,** marine, osmosis in (QUINTON), A., ii, 116.

**Invertin** (ISSAEW), A., ii, 262; (WRÓBLEWSKI), A., ii, 466, 617.

presence of, in grapes (MARTINAND), A., ii, 35.

**Iodination** by means of bromide and chloride of iodine (ZERNOFF), A., i, 185.

of alkylbenzenes (EDINGER and GOLDBERG), A., i, 22.

**Iodine,** organic, in the waters of Salsomaggiore (MONTANARI), A., ii, 664. origin of, in the organism (BOURCET), A., ii, 520.

presence and localisation of, in the leucocytes of blood (STASSANO and BOURCET), A., ii, 518.

and the colour of iodine solutions (VAUBEL), A., ii, 446.

action of liquid ammonia, and of sodamide and liquid ammonia on (RUFF), A., ii, 16.

action of, on chlorine heptoxide and on perchloric acid (MICHAEL and CONN), A., ii, 152.

**Iodine monochlorides,**  $\alpha$ - and  $\beta$ - (ODDO), A., ii, 648.

*trichloride* (ODDO), A., ii, 649.

**Iodine:—**

**Hydriodic acid** (*hydrogen iodide*), catalysis in the reaction between hydrogen peroxide and (BRODE), A., ii, 443; (MANCHOT and WILHELMS), A., ii, 658.

photochemical decomposition of (PINNOW), A., ii, 634.

**Iodides,** presence of, in crystalline rocks (GAUTIER), A., ii, 398.

absorption spectra of solutions of (HAGENBACH), A., ii, 434.

**Iodic acid,** preparation of (SCOTT and ARBUCKLE), T., 302; P., 1901, 2.

action of, on uric acid (BOUILLET), A., ii, 290.

**Iodine, estimation and separation of:—** estimation of, in dressings (FRERICHS), A., ii, 42, 204.

rate of separation of, from hydriodic acid, influence of various agents on the (BRODE), A., ii, 443.

**Iodine absorption number** of fats and oils, absolute (TORTELLI and RUGGERI), A., ii, 47.

**Iodoform,** electrolytic formation of (ELBS and FOERSTER), A., i, 109.

decomposition of, in chloroform solution (SCHUYTEN), A., i, 3.

estimation of, in dressings (FRERICHS), A., ii, 42, 204.

**Iodohæmin.** See Hæmin.

**Iodohæmoglobin.** See Hæmoglobin.

**Iodoxy-compounds,** conversion of, into iodosofluorides (WEINLAND and STILLE), A., i, 684.

**Iodyrite** from Broken Hill, New South Wales (SPENCER), A., ii, 394.

**Ionone,** isomeride of (TIEMANN and SCHMIDT), A., i, 157.

$\alpha$ -**Ionone,** constitution of (TIEMANN and SCHMIDT), A., i, 159.

**Ions.** See Electrochemistry.

**Iridium,** estimation and separation of, from platinum ore (LEIDIÉ), A., ii, 62; (LEIDIÉ and QUENNESSEN), A., ii, 695.

separation of, from rhodium (PICCINI and MARINO), A., ii, 392.

**Iron** from the standpoint of the phase rule (v. JÜPTNER), A., ii, 161.

and nickel, simultaneous deposition of, from mixed solutions of their sulphates (KÜSTER), A., ii, 555.

rate of solution of, in hydrochloric acid (CONROY), A., ii, 388.

rendering passive, passivity, and rendering active of (HEATHCOTE), A., ii, 445.

irregular distribution of sulphur in (BOLLING), A., ii, 124.

**Iron**, action of ammonia on, at high temperatures (BEILBY and HENDERSON), T., 1248; P., 1900, 190.  
 action of, in anæmia experimentally produced (MÜLLER), A., ii, 522.  
 in hens' eggs (HOFFMANN), A., ii, 608.  
 in human milk (JOLLES and FRIEDJUNG), A., ii, 671.  
 of normal urine (NICOLA), A., ii, 326.  
 relationship of, in the urine and in the blood (JOLLES and WINKLER), A., ii, 30.  
**Iron alloy** with aluminium (BRUNCK), A., ii, 656.  
**Iron salts**, catalytic action of (MANCHOT and WILHELMS), A., ii, 658.  
 action of alcohols on (DITZ), A., ii, 223.  
 nitride from the crater of Vesuvius (MATTEUCCI; GAUTIER), A., ii, 63.  
 preparation, properties and reactions of (FOWLER), T., 285; P., 1900, 209; (BEILBY and HENDERSON), T., 1249; P., 1901, 190.  
 heat of formation and constitution of (FOWLER and HARTOG), T., 299; P., 1900, 210.  
*peroxides* (MANCHOT and WILHELMS), A., ii, 658.  
*silicides* (LEBEAU; JOUVE), A., ii, 317.  
**Ferric salts**, velocity of the reaction and polymolecular transformations between, and metallic iodides (SCHÜKAREFF), A., ii, 647.  
 physical and chemical changes in solutions of (SCHAER), A., ii, 603.  
 reduction of (MORGAN), A., ii, 694.  
 potassium thiocyanate as indicator in the reduction of (EBELING), A., ii, 424; (VOLHARD), A., ii, 580; (DE KONINCK), A., ii, 694.  
 chloride in aqueous hydrochloric acid, separation of, from other metallic chlorides by ether (SPELLER), A., ii, 350.  
 and nitrate, temperature coefficient of susceptibility of solutions of (MOSLER), A., ii, 643.  
 hydroxide, formation of (MATUSCHEK), A., i, 455, 584, 635, 636, 677.  
 solubility of, in ammonium salicylate (WOLFF), A., ii, 198.  
 cesium nitrate (WELLS, BEARDSLEY, JAMIESON, and METZGER), A., ii, 653.

**Iron:—**

**Ferric oxide**, soluble alkali salts of (HABER and PICK), A., ii, 103; (PICK), A., ii, 554.  
 compound of (HABER and PICK), A., ii, 103; (HABER), A., ii, 555.  
**Ferrous salts**, action of steam on (GAUTIER), A., ii, 171.  
 oxide, new method of preparing (FÉRÉE), A., ii, 513.  
 estimation of, in silicates (DE KONINCK), A., ii, 284.  
 ferric oxide (KAUFMANN), A., ii, 554.  
 oxythiocarbonate, presence of, in the water of the Rhone (CAUSSE), A., ii, 61.  
**Iron ores**, titaniferous, separation of, in basic igneous rocks (VOGT), A., ii, 63, 319.  
**Steel** from the standpoint of the phase rule (V. JÜPTNER), A., ii, 161.  
**Steel-making alloys**, estimation of tungsten in (IBBOTSON and BREARLEY), A., ii, 199.  
**Steel**, estimation of aluminium in (SPATZ), A., ii, 349.  
 estimation of carbon in (JOB and DAVIES), A., ii, 127; (SCHMITZ), A., ii, 691.  
 apparatus for the estimation of carbon in (GÖCKEL), A., ii, 39.  
 estimation of nickel in (NORRIS), A., ii, 580.  
 estimation of phosphorus in (IBBOTSON and BREARLEY), A., ii, 343.  
 estimation of sulphur in (AUCHY), A., ii, 420; (NOYES and HELMER), A., ii, 687.  
 estimation of tungsten in (IBBOTSON and BREARLEY), A., ii, 199.  
 Schöffel's process for estimating tungsten in (BAGLEY and BREARLEY), A., ii, 200.  
**Iron compounds, organic**, occurrence of, in plants (SUZUKI), A., ii, 678.  
**Iron** (in general), **estimation and separation of:—**  
 estimation of, by potassium-iodide-iodate mixture (STOCK and MAS-SACIU), A., ii, 284.  
 estimation of, volumetrically, by means of stannous chloride (ZENDELIS), A., ii, 533.  
 estimation of bivalent, influence of pyrites and other sulphides on the (DE KONINCK), A., ii, 284; (HILLEBRAND and STOKES), A., ii, 424.  
 estimation of, in "Ferrum oxydatum saccharatum" (GÖHLICH), A., ii, 132.

**Iron** (in general), **estimation and separation of:**—

estimation of metallic, in reduced iron (MARQUARDT), A., ii, 693.

estimation of, in magnetite ores by the specific gravity test (RICHARDS), A., ii, 132.

estimation of, in human urine (HOFFMANN), A., ii, 326.

estimation of carbon in (SCHMITZ), A., ii, 691.

apparatus for the estimation of carbon in (GOCKEL), A., ii, 39.

estimation of phosphorus in (IBBOTSON and BREARLEY), A., ii, 343.

estimation of sulphur in (AUCHY), A., ii, 420; (NOYES and HELMER), A., ii, 687.

**isoIrene** from bearswort oil (HAARMANN & REIMER), A., i, 727.

**Iron-spar**, estimation of small quantities of zinc in (FLATH), A., ii, 625.

**Isatin** and its derivatives (MARCHLEWSKI and SOSNOWSKI), A., i, 415, 615; (MARCHLEWSKI and RADCLIFFE), A., i, 416.

action of, on *o*-phenylenediamine (MARCHLEWSKI and BURACZEWSKI), A., i, 347.

**Isatin**, chloro-, from albumin (GNEZDA), A., i, 780.

**Isinglass**, new test for (HENZOLD), A., ii, 52.

**Isobaric** aqueous solutions (GROSHANS), A., ii, 644.

**Isomeric change** (LAPWORTH), T., 1265; P., 1901, 2.

**Isomorphism** between the salts of bismuth and the rare earths (BODMAN), A., ii, 454.

**Iulus terrestris**, a volatile venom from the skin of (PHISALIX; BÉHAL and PHISALIX), A., ii, 69.

**Ivy** as a calcareous plant (v. KLENZE), A., ii, 185.

**J.**

**Jalapic acid**, decacetyl derivative of (KROMER), A., i, 647.

**Jalapin**, action of barium hydroxide on (KROMER), A., i, 629.

pentacetyl derivative of (KROMER), A., i, 647.

**Jams**, composition of (TOLMAN, MUNSON, and BIGELOW), A., ii, 588.

**Japaconitine**, physiological action of (CASH and DUNSTAN), A., ii, 613.

**Jasmine blossoms**, oil of (HESSE), A., i, 220, 732; (ERDMANN), A., i, 601.

**Jellies**, composition of (TOLMAN, MUNSON, and BIGELOW), A., ii, 588.

LXXX. ii.

**Juniper**, empyreumatic oil of (CATHELIN-BAU and HAUSSER), A., i, 283.

**Juroresen** (TSCHIRCH and BRÜNING), A., i, 91.

**Jute**, pentosans of (SCHÖNE and TOLLENS), A., ii, 414.

**K.**

**Kainite**, formation of, at 25° (VAN'T HOFF and v. EULER-CHELPIŃ), A., ii, 249; (VAN'T HOFF and MEYER-HOFFER), A., ii, 396.

**Kairoline** (*methyltetrahydroquinoline*), action of methyl iodoacetate on (WEDEKIND), A., i, 640.

**Karabin** from *Nerium odorum* (BOSE), P., 1901, 92.

**Katabolism**, decomposition of carbamide by (BEYERINCK), A., ii, 264.

**Kauric acid**,  $\alpha$ - and  $\beta$ -**Kaurolic acids**, **Kaurinolic acids**, and **Kauroresen** from Kauri copal (TSCHIRCH and NIEDERSTADT), A., i, 398.

$\alpha$ -**Ketoangelicalactone** phenylhydrazone and its isomeride (WOLFF and HEROLD), A., i, 504.

**Ketobutylidenebistetronic acid** (WOLFF and GABLER), A., i, 284.

**Ketocoumaran**. See **Coumaranone**.

**4-Ketodihydroquinazolines**, synthesis of (GOTTHELF), A., i, 764.

$\zeta$ -**Keto- $\beta$ -dimethyloctoic acid** (LESER), A., i, 278.

**2-Ketohexahydroindazole** (DIECKMANN), A., i, 542.

**Ketohexyltetriconic acid** (WOLFF and GABLER), A., i, 285.

$\alpha$ -**Keto- $\gamma$ -hydroxybutane- $\alpha\gamma$ -dicarboxylic acid** and its salts and phenylhydrazones (DE JONG), A., i, 446.

$\gamma$ -lactone of. See  $\alpha$ -**Ketovalerolactone- $\gamma$ -carboxylic acid**.

**Ketohydroxy-ethoxy- and -isobutoxy-dihydropentanthrenedicarboxylic acids**, bromo-, ethyl esters (LIEBERMANN and LANSER), A., i, 467.

**Ketomenthone**,  $C_{10}H_{18}O$  (KONDAKOFF and BACHTSCHÉEFF), A., i, 334.

**Ketomethane** derivatives, addition of, to unsaturated compounds (VORLÄNDER), A., i, 84.

**Ketone** from oil of cassia flowers (SCHIMMEL & Co.), A., i, 394.

$C_7H_{12}O$ , and its semicarbazone, from the reduction of tropilen (WILLSTÄTTER), A., i, 650.

$C_7H_{12}O_2$ , from the oxidation of the ketoglycol,  $C_8H_{16}O_3$ , from dihydromyrcene (SEMMLER), A., i, 732.

$C_8H_{12}O$ , from sorbic acid (DOEBNER and WOLFF), A., i, 578.

**Ketone**,  $C_9H_{10}O_2$ , from the oxidation of *i*-terpineol (SCHIMMEL & Co.), A., i, 395.

$C_{10}H_{12}O_2$ , from *p*- $\psi$ -propenylanisole (BEHAL and TIFFENEAU), A., i, 273.

**Ketones**, preparation of, by the action of alkyl haloids and alkylcarbimides on nitriles in presence of magnesium or zinc bromides (BLAISE), A., i, 133.

influence of light on the interaction of, with alcohols (CIAMICIAN and SILBER), A., i, 329.

specific difference between aldehydes and (OECHSNER DE CONINCK and SERVANT), A., i, 126.

acidimetry of (ASTRUC and MURCO), A., i, 66.

action of benzamidine and *p*-tolenylamidine on (KUNCKELL and BAUER), A., i, 758.

action of, on ethyl cyanoacetate (GUARESCHI), A., i, 341; (PEANO), A., i, 346.

action of diazobenzene on (BAMBERGER and MÜLLER), A., i, 778.

and ethyl malonate, action of sodium ethoxide on a mixture of (STOBBE), A., i, 549.

condensation of, with ethyl isonicotinate (TSCHERNE), A., i, 749.

compounds of, with complex acids (v. BAEYER and VILLIGER), A., i, 659.

compounds of, with aminophenylguanidine (PELLIZZARI and RICKARDS), A., i, 769.

combination of, with phenylhydrazine and hydroxylamine (PETRENKO-KRITSCHENKO and LORDKIPANIDZÉ), A., i, 505; (PETRENKO-KRITSCHENKO and ELTSCHANINOFF), A., i, 506.

acetylenic (MOUREU and DELANGE), A., i, 352.

decomposition of, by alkalis (MOUREU and DELANGE), A., i, 14.

chlorinated hydroxy-, action of alkalis on (BRUHNS), A., i, 216.

$\alpha$ - $\beta$ -unsaturated, addition of, to diethyl succinate (STOBBE), A., i, 147, 276.

**Ketones and Quinones**. See also:—

4-Acetoacetylpyridine.

Acetone.

Acetonylaceton.

Acetonylisocamphor.

Acetophenone.

1-Acetoxy-2-benzoylcamphene.

Acetoxyethylidenacetone.

*p*-Acetylacetanilide.

Acetylacetone.

Acetylaminoethoxyacetophenone.

**Ketones and Quinones**. See:—

Acetylaminohydroxyacetophenone.

5-Acetylamino-1:2-naphthaquinone.

Acetyldiphenyl.

3-Acetyl-7-ethoxy-2-methylchromone.

2-Acetylfurfuran.

$\alpha$ -Acetylheptinene.

Acetylhexoylmethane.

Acetylmesitylene.

Acetylmethylcyclohexanone.

2:3-Acetylmethylquinoxaline.

Acetylphenylethylidenecyclohexyl-azan.

Acetylpipecrine.

Acetyltrimethyl-lotoflavin.

Acridone.

$\alpha$ -Amylanhydracetonebenzil.

2-*iso*-Amyl-4-ketodihydroquinazoline.

Anhydracetonebenzil.

Anil, chloro- and bromo-.

Anilindibenzoylthane.

Anilinoethylenedihydroisophorone.

Anilinoethylmethylenecyclohexanone.

2-Anilino-5-*isopropyl*-1:4-benzoquinone.

Anisylidenacetophenone.

Anisyl methyl ketone.

Anthradiquinones.

Anthragallol.

Anthraphenone.

Anthrapurpurin.

Anthraquinone.

Antipyrine.

Apigenin.

Benzamidinoisobutyrophenone.

Benzeneazo- $\alpha$ -ketoglutarimide.

Benzeneazophenylacetylacetophenone.

Benzil.

4-Benzoylacetylpyridine.

Benzophenone.

*o*-Benzoquinone.

Benzoquinonophenylhydrazonetetramethyl-diaminodiphenylmethane.

Benzoylanisoylmethane.

$\alpha$ -Benzoylcamphor.

Benzoyldiacetylthane.

$\alpha$ -Benzoylheptinene.

Benzoylhexoylmethane.

1-Benzoylpyridazone.

1-Benzoxy-2-benzoylcamphene.

Benzylantipyrine.

Benzylethylaminooanthraquinone.

Benzylidenacetone.

Benzylidenacetophenone.

Benzylidene- $\alpha$ -amylanhydracetonebenzil.

Benzylidenecamphor.

Benzylidene- $\alpha$ -ethylhydracetonebenzil.

$\alpha$ -Benzylidenehydrindone.

Benzylidenendanedione.



**Ketones and Quinones. See:—**

Benzylidenementhone.  
 Benzylidene- $\alpha$ -methylanthracetonebenzil.  
 Benzylidenepropiophenone.  
 Benzylidene- $\alpha$ -propylanthracetonebenzil.  
 Benzyl isopropyl ketone.  
 2-Benzyl-2-*o*-tolylidiketohydrindene.  
 Bisphenylethylpyrazolone.  
 Bisphenylpropylpyrazolone.  
 2-*iso*Butyl-4-ketodihydroquinazoline.  
 $\omega$ -Butyryl-2:4-dithoxyacetophenone.  
 Camphor.  
 Camphorquinone  
 Carbanilphenylethylideneoxycyclo-triazan.  
 Carbofenchonone.  
 Carminone.  
 Carone.  
 Carvenone.  
 Carvone.  
 Carvotanacetone.  
 Chromones.  
 Coumaranone.  
 Coumarone.  
 Cumyl methyl ketones.  
 Cymyl chloromethyl ketone.  
 Deoxyalizarin.  
 Deoxyanthrapurpurin.  
 Deoxybenzoin.  
 Deoxyflavopurpurin.  
 Desylene-methyl and -ethyl ethyl ketones.  
 Dibenzoyldiphenylbutadiene.  
*s*-Dibenzoylthylenes.  
 2:5-Dibenzoylfurfuran.  
 $\alpha\gamma$ -Dibenzoylpropane.  
 Dibenzylideneacetone.  
 Dibenzyl ketone.  
 3:6-Dibutyl-2:5-diketopiperazines.  
 Dibutyryl.  
 2:4-Diethoxybenzoylmethylacetone.  
 Diethoxycarminone.  
 Diethylaminoanthraquinone.  
 3-Diethylamino-5:6:7:8-tetrachloroanthraquinone.  
 Diethylaminodihydroxyanthraquinone.  
 $\alpha\beta$ -Diethylanthracetonebenzil.  
 Diethyl diketone.  
 3:6-Diethyl-2:5-diketopiperazine.  
 Diethyl ketone.  
 $\beta\beta$ -Diethylsulphone- $\gamma$ - and - $\delta$ -methylpentane- $\delta$ - and - $\gamma$ -ones.  
 $\beta\beta$ -Diethylsulphonepentane- $\gamma$ -one.  
 Diformazyl phenyl ketone.  
 Dihydroanthraphenone.  
 Dihydrotruxone.  
*mp*-Dihydroxybenzylideneindanone.  
 Dihydroxydihydromesityl oxide.

**Ketones and Quinones. See:—**

*o*-Dihydroxyphenylhydroxy-*o*-quinone.  
 Dihydroxyquinone.  
 4- $\alpha\gamma$ -Diketobutylpyridine.  
 Diketohydrindene.  
 1:2-Diketocyclopentane.  
 4- $\alpha\gamma$ -Diketo- $\gamma$ -phenylpropylpyridine.  
 2:6-Diketo-4-*isopropyl*hexamethylene.  
 2:6-Diketo-3:4:4'-trimethylhexamethylene.  
*o*-Dimethoxybenzoin.  
 5:7-Dimethoxy-2'-ethoxyflavone.  
 5:7-Dimethoxy-3'-ethoxyflavone.  
 6:7-Dimethoxy-3-methylcoumarone.  
 5:7-Dimethoxy-3'4'-methylenedioxyflavone.  
 4-Dimethylaminobenzylideneindanone.  
*p*-Dimethylaminobenzylideneindanone.  
 Dimethylaminomethylenementhone.  
 4-Dimethylamino-1-phenyl-2:3-dimethyl-5-pyrazolone.  
 Dimethylanthracetonebenzils.  
 1:3-Dimethylbenziminazolone.  
 6:8-Dimethyl-1:4-benzopyrone.  
 4:6-Dimethylcoumaranone.  
 Dimethylcoumarone.  
 3:6-Dimethyl-2:5-diketopiperazine.  
 1:4-Dimethyl-3-cyclohexanone.  
 Dimethylcyclohexenone.  
 Dimethylpurones.  
 Diphenylacetylacetoguanamine.  
 Diphenaclys.  
 $\alpha\beta$ -Diphenyl- $\alpha$ -diethylthioethane- $\beta$ -one.  
 Diphenylcyclopentenolone.  
 1:4-Diphenyl-1:2:4-triazolone-3-thio-methane.  
 Dipropionyl.  
 Dipropyl diketone.  
 Di-*o*-tolylacetylacetoguanamine.  
 Dypnone.  
 Ethenyl-4-methylumbelliferone.  
*m*-Ethoxyacetophenone.  
 Ethoxyaminoacetophenone.  
 $\alpha$ -Ethoxyanisylideneacetophenone.  
 7-Ethoxychromone.  
 7-Ethoxy-2:3-dimethylchromone.  
 Ethoxy-2-ethylchromones.  
 3'-Ethoxyflavone.  
 Ethoxynaphthylidene-camphor.  
 2-Ethoxy-5-*isopropyl*-1:4-benzoquinone.  
 Ethylacetylacetone.  
 $\alpha$ -Ethylanhydracetonebenzil.  
 Ethylideneacetone.  
 2-Ethyl-4-ketodihydroquinazoline.  
 Ethylxalyl-*o*-aminoacetophenone.  
 1-Ethyl-2-quinolone.  
 Ethyl-*p*-quinone.

**Ketones and Quinones. See:—**

Fenchocamphorones.  
 Fenchone.  
 Fluorenone.  
 Formazyl methyl ketone.  
 Formyl-*o*-aminoacetophenone.  
 Hexahydroxyanthraquinone.  
*cyclo*Hexanone.  
 8-Hydrazino-4-methylumbelliferone.  
 Hydrocoumarone.  
 Hydroxyacetophenones.  
 Hydroxyacetylpaenol.  
 $\alpha$ -Hydroxyanisylideneacetophenone.  
 1-Hydroxy-2-benzoylamphene.  
 2-Hydroxybenzylacetophenone.  
 $o$ -Hydroxybenzylideneacetyl piperone.  
 Hydroxybenzylidenecoumaranones.  
 Hydroxybenzylideneindanones.  
 7-Hydroxychromone.  
 $\alpha$ -Hydroxycyanocamphor.  
 5-Hydroxy-7:2'-diethoxyflavone.  
 5-Hydroxy-7:2'-dimethoxyflavone.  
 7-Hydroxy-2:3-dimethylchromone.  
 1-Hydroxy-3-ethylamino-5:6:7:8-*tetrachloroanthraquinone*.  
 Hydroxy-2-ethylchromones.  
 3'-Hydroxyflavone.  
 2-Hydroxyfluorenone.  
 6-Hydroxy-2-keto-3:4:4-trimethylhexamethylene.  
*p*-Hydroxy-*m*-methoxybenzylideneindanone.  
 5-Hydroxy-3-methoxy-*p*-xyloquinone.  
 7-Hydroxy-2-methylchromone.  
 Hydroxymethylenedihydroisophorone.  
 5-Hydroxy-7-methyldiketohydrindene (*carminone*).  
 2-Hydroxy-1-methyl-3-ketophenylpropenyl-5-benzeneazobenzene.  
 Hydroxymethyl-4-methylcoumarone.  
 Hydroxymethylmethylenecyclohexanone.  
 2-Hydroxy-1:4-naphthaquinone.  
 2-Hydroxy-5-*isopropyl*-1:4-benzoquinone.  
 7-Hydroxy-2-propylchromone.  
 $\beta$ -Hydroxypropyl-3-methylpyrazolone.  
 Hydroxytrisdiketohydrindene.  
 Ianthone.  
 Indanedione.  
 Ionone.  
*iso*Ironone.  
 Ketocoumaran.  
 4-Ketodihydroquinazolines.  
 2-Ketohexahydroindazole.  
 Ketomenthone.  
 3-Keto-2-phenylhexahydroindazole.  
 3-Keto-2-phenyl-4-methylhexahydroindazole.  
 2-Ketotetrahydro-oxazole.  
 3-Keto-2:2:5:5-tetramethylpyrrolidine.  
 Lapachonone.

**Ketones and Quinones. See:—**

Laurenone.  
 Limonenone.  
 Lotoflavin.  
 Luteolin.  
 $\Delta^8$ -Menthene-2-one.  
 Menthone.  
 Mesityl methyl ketone.  
 Mesityl oxide.  
 $\omega$ -*o*-Methoxybenzoyl-3-ethoxyacetophenone.  
 2-Methoxybenzylacetophenone.  
 7-Methoxy-2:3-dimethylchromone.  
 6-Methoxy-2-ethylchromone.  
 Methoxynaphthylidenecamphor.  
 2-Methoxy-5-*isopropyl*-1:3-benzoquinone.  
 Methylacetone.  
 Methylacetylacetone.  
 3-Methyl-2-*iso*amyl-4-ketodihydroquinazoline.  
 Methylanthhydracetone-mono- and -di-benzils.  
 Methyl *isobutenyl* ketone.  
 3-Methyl-2-*isobutyl*-4-ketodihydroquinazoline.  
 4-Methyl-2-*isobutylcyclopentanone*.  
 Methylcoumaranones.  
 Methylidibenzoylmethane.  
 Methyl  $\gamma\delta$ -dihydroxybutyl ketone.  
 Methyl diphenylcyclopentanone.  
*mp*-Methylenedioxybenzylideneindanone.  
 Methylenementhone.  
 3-Methyl-2-ethyl-4-ketodihydroquinazoline.  
 Methyl ethyl ketone.  
 Methylheptenone.  
 Methyl heptyl ketone.  
 $\beta$ -Methylcyclohexanone.  
 $\beta$ -Methylhydrindone.  
 2-Methyl-4-ketodihydroquinazoline.  
 Methyl nonyl ketone.  
 8-Methyl-5-propyl-1:4-benzopyrone.  
 3-Methyl-2-*n*- and -*iso*-propyl-4-ketodihydroquinazolines.  
 3-Methyl-1-*isopropylcyclopentanone*.  
 4-Methyl-3-propyl-5-pyrazolone.  
 4-Methylpurone.  
 4-Methylisopurone.  
 3-Methyl-5-pyrazolone.  
 1-Methylpyridone.  
 Methylquinolones.  
*p*-Methylquinophthalone.  
 Methyl- $\alpha\beta$ -cyclotrimethylenedaphnetin.  
 Methyl- $\alpha\beta$ -cyclotrimethyleneumbelliferone.  
 4-Methylumbelliferone.  
 $\alpha$ -Naphthaquinone-3-diketohydrindene.  
 Naphthaquinones.

**Ketones and Quinones.** See:—

Naphthyl methyl ketones.  
 Pentamethoxybenzoylacetophenone.  
*cyclo*Pentanone.  
 Phenacyl benzyl ketone.  
 Phenacylidenebenzamidine.  
 Phenacylidene-*p*-tolenylamidine.  
 Phenacylphenacetin.  
 Phenanthraquinone.  
 Pheno- $\alpha$ -ketoheptamethylene.  
 5-Phenoxy-1-phenylpyridazone.  
 Phenylacetylacetophenone.  
 1-Phenyl-4-benzyl-3-methylpyrazolone.  
 $\alpha$ -Phenyl- $\gamma$ -diethylsulphonebutane- $\alpha$ -one.  
 2-Phenyl-1:3-dimethyl-1:3-dibenzoylpropane.  
 1-Phenyldimethylpyrazolones.  
 Phenyl ethyl ketone.  
 1-Phenyl-3-ethylpyrazolone.  
 2-Phenylhydrazine-4-methyl-5-ethylpyrimidine.  
 2-Phenylhydrazine-4-methylpyrimidine.  
 Phenyl-3-methyl-4-benzeneazo-5-pyrazolone.  
 2-Phenylmethylhydrazine-4-methylpyrimidine.  
 1-Phenyl-4-methyl-3-propyl-5-pyrazolone.  
 1-Phenyl-3-methylpyrazolone.  
 1-Phenyl-5-methylpyridazone.  
 5-Phenyl-3-*isooxazolone*.  
 Phenylpropylpyrazolones.  
 Phenylthiodiazolonethiomethane.  
 Phorone.  
 $\omega$ -Propionyl-diethoxyacetophenones.  
 Propiophenone.  
*iso*Propyl *iso*amyl ketone.  
 Propylanhydrazetonebenzils.  
*iso*Propylideneacetone.  
 2-*n*- and -*iso*-Propyl-4-ketodihydroquinazoline.  
 Propyl *isopropyl* ketone.  
 3-Propyl-5-pyrazolone.  
 Pulegone.  
 Purone.  
*iso*Purone.  
 Pyridones.  
 Pyridylchlorodihydroxyquinone.  
 Pyridyl*zichloro*hydroxyquinone.  
 Quinhydrone.  
 Quinolones.  
 Quinolylenephenylene ketone.  
 Quinones.  
 Quinonebenzoyl- $\alpha$ -naphthylhydraz-one.  
 Quinophthalone.  
 Retenequinone.  
*iso*Safraninone.  
 Telluroacetylcumene.

**Ketones and Quinones.** See:—

Telluromethyl  $\psi$ -cumyl,  $\alpha$ -naphthyl, *p*-phenetyl and xylyl ketones.  
 Tetracetyl-tetramethylene.  
 Tetradecylbenzoylacetylene.  
 Tetrahydroxymethylanthraquinone.  
 2:4:6:4'-Tetramethoxybenzoylacetophenone.  
 2:4:6:3'-Tetramethoxy-4'-ethoxybenzoylacetophenone.  
 3:4-*cyclo*Tetramethylene-5-pyrazolone.  
 1:2-*cyclo*Tetramethyleneumbelliferone.  
 Tetramethylpurone.  
 Tetraphenyl*cyclopent*uolone.  
 Thymoquinone.  
 Thymoquinonebenzoyl- $\alpha$ -naphthylhydrazone.  
*p*-Tolacylidenebenzamidine.  
*p*-Tolacylidene-*p*-tolenylamidine.  
 2-*p*-Toluidino-5-*isopropyl*-1:4-benzquinone.  
 Toluo- $\gamma$ -pyrones.  
*p*-Toluquinone.  
 Toluquinonebenzoyl- $\alpha$ -naphthylhydrazone.  
*p*-Toluquinophthalone.  
 2-*o*-Tolyldiketohydrindene.  
 2-*o*-Tolyl-2-ethyldiketohydrindene.  
 2-*o*-Tolyl-2-methyldiketohydrindene.  
 5-*p*-Tolyl-3-methyl*cyclohex*enone.  
*p*-Tolyl methyl ketone.  
*p*-Tolylthiodiazolonethiomethane.  
*p*-Tolylthiodiazolone-*p*-tolylthiomethane.  
 Triacetoneamine.  
*m*-Triazoacetophenone.  
 Tribenzoylanthracene.  
 Tribenzoyltetrahydroanthracene.  
 5:7:2'-Trihydroxyflavone.  
 Trihydroxyflavones.  
 $\beta\gamma\delta$ -Triketopentane.  
 2:4:6-Trimethoxybenzoyl-3'-ethoxyacetophenone.  
 2:4:6-Trimethoxybenzoyl-3':4'-methylenedioxyacetophenone.  
 2:4:6-Trimethoxy-2'-ethoxybenzoylacetophenone.  
 5:7:3'-Trimethoxy-4'-ethoxyflavone.  
 $\alpha\beta\beta$ -Trimethylanthrahydrazetonebenzyl.  
 3:4-*cyclo*Trimethylene-pyrazolone.  
 1:4:6-Trimethylpurone.  
 1:4:6-Trimethyl*isopur*one.  
 $\beta\zeta\mu$ -Trimethyltriskaideka- $\beta\zeta\theta\lambda$ -tetrene- $\kappa$ -one.  
 Tropinone.  
 Truxone.  
 Urethylcoumarone.  
 Vinylacetoneamine.  
*m*-Xylyl methyl ketone.  
*cyclo*- $\beta$ -Ketonecarboxylic esters (DIECKMANN), A., i, 539.

**Ketonic acid**,  $C_8H_{12}O_3$ , from the oxidation of fenchene (WALLACH and NEUMANN), A., i, 332.

$C_{10}H_{16}O_3$ , from the oxidation of *cyclo*-dihydromyrcene (SEMMLER), A., i, 732.

**Ketonic acids**, mercaptoles from (POSNER), A., i, 703.

**$\beta$ -Ketonic acids**, preparation of, by the action of alkyl salts of  $\alpha$ -bromo-acids of the acetic series in presence of magnesium or zinc bromide (BLAISE), A., i, 133.

**$\delta$ -Ketonic acids**, simple synthesis of (STOBBE), A., i, 324.

**3-Keto-2-phenylhexahydroindazole** and its 4-methyl derivative (DIECKMANN), A., i, 542.

**2-Ketotetrahydro-oxazole**, nitro-derivative (FRANCHIMONT and LUBLIN), A., i, 674.

**3-Keto-2:2:5:5-tetramethylpyrrolidine** and its nitrosoamine, and cyanohydrin (PAULY and BOEHM), A., i, 607.

**$\alpha$ -Ketovalerolactone- $\gamma$ -carboxylic acid** and its phenylhydrazone and  $\beta$ -bromo-,  $\alpha$ -nitro- and benzoyl derivatives (DE JONG), A., i, 446; (WOLFF), A., i, 499; (WOLFF and HEROLD), A., i, 502.

**Ketoximes**, action of alkyl haloids on (DUNSTAN and GOULDING), T., 628; P., 1901, 84.

**Ketoximohydroxyethoxydihydropentanthrene**, bromo- (LIEBERMANN and LANSER), A., i, 466.

chloro- (BERTHEIM), A., i, 468.

**Keuper marl**, chemical and mineralogical constituents of (WÜLFING), A., ii, 113.

**Kidneys**, action of hesperidin and of phloridzin on the (v. KÓSSA), A., ii, 31.

action of pituitary extract on the (MAGNUS and SCHAFER), A., ii, 612.

composition of pus from a tumour in the (PATEIN and POYOU), A., ii, 566.

**Kipp's apparatus**, modification of (THIELE), A., ii, 546.

**Koswite** from the Urals (DUPARC and PEARCE), A., ii, 398, 664.

**"v. Krottnaurer's patent manure."** See Agricultural Chemistry.

**Krypton**, isolation of, from air (DEWAR), A., ii, 597.

separation and spectra of (LIVEING and DEWAR), A., ii, 598.

physical properties of (RAMSAY and TRAVERS), A., ii, 238.

refraction of (RAMSAY), A., ii, 141.

**Kyanite** from Trpín, Moravia (KOVÁŘ), A., ii, 606.

**Kynurenic acid**, conversion of aminophenylpropionic acid into (CAMPS), A., i, 751.

origin of, in the organism (GLAESSNER and LANGSTEIN), A., ii, 669.

excretion of (MENDEL and SCHNEIDER), A., ii, 259, 565; (GIES), A., ii, 407.

**Kynurin (4-hydroxyquinoline)** (CAMPS), A., i, 751.

physiological action of (v. FENYVÉSSY), A., ii, 31.

## L.

**Labradorite** from New South Wales (HARKER), A., ii, 320.

**Laccase** (SLOWTZOFF), A., i, 177.

**Lactase** of the pancreas (WEINLAND), A., ii, 30.

**Lactic acid (i-ethylidenelactic acid;  $\alpha$ -hydroxypropionic acid)** in beet molasses (SCHÖNE and TOLLENS), A., i, 116.

occurrence and estimation of, in wines (KUNZ), A., ii, 700.

formation of, in the blood (ASHER and JACKSON), A., ii, 563.

action of *Bacillus coli communis* on (HARDEN), T., 624; P., 1901, 58. formation of chloroform from (EBERHARD), A., i, 357.

fermentation. See Fermentation.

**Lactic acid**, zinc salt, and menthyl ester (COHEN and WHITELEY), T., 1309; P., 1900, 213.

**d-Lactic acid**, formation of, in the organism (SAITO and KATSUYAMA), A., ii, 405.

*post mortem* formation of (OSBORNE), A., ii, 460.

**Lactic anhydride**, estimation of, in lactic acid (KUNZ), A., ii, 428.

**Lactomucin** (LAJOUX), A., ii, 671.

**Lactone**,  $C_8H_{14}O_2$ , from the oxide  $C_8H_{18}O_2$  (PETCHNIKOFF), A., i, 183.

**Lactones**, action of zinc ethyl on (GRANICHSTÄDTEN and WERNER), A., i, 518.

**Lactones**. See also:—

$\beta$ -Acetylglutaric acid, ketodilactone of.  $\beta$ -Acetyltrimethylglutaric acid, ketodilactone of.

$\alpha$ -Acetyl- $\gamma$ -valerolactone.

Alantolactone.

$\beta$ -Benzoylglutaric acid, ketodilactone of.

$\alpha$ -Benzoyl- $\gamma$ -valerolactone.

Benzyl- $\beta$ -glutaric acid, ketodilactones of.

**Lactones.** See:—

- Benzylidene- $\beta$ -acetylglutaric acid, ketodilactone of.  
 Butyrolactonecarboxylic acid.  
 $\beta$ -Butyrylglutaric acids, ketodilactones of.  
 Callitrolic acid, lactone of.  
 Campholytolactone.  
 Carboxyphenylbutyrolactoneacetic acid.  
 Dihydroisalanolactone.  
 $\alpha\alpha_1$ -Dihydroxy- $\beta\beta$ -dimethylglutaric acid, lactone of.  
 Diketovalerolactone- $\gamma$ -carboxylic acid.  
 Dimethylethylhydroxybutanetricarboxylic acid, lactone of.  
 Dimethylethylhydroxybutanetricarboxylic acids, lactones of.  
 $\beta\delta$ -Diphenylvalerolactoneacetic acid.  
 $\iota$ -Erythronic acid, lactone of.  
 Glycunolactone.  
 Heptolactoneacetic acid.  
*iso*Hexolactone.  
 Hydroxydimethylbutanetricarboxylic acids, lactones of.  
 Hydroxydimethylcoumarin.  
 Hydroxy- $\beta\beta$ -dimethylglutaric acids, lactones of.  
 $\gamma$ -Hydroxyethylmalonic acid, lactone of.  
 $\gamma$ -Hydroxycycloheptanecarboxylic lactone.  
 Hydroxyhexahydroxylic acids, lactones of.  
 $\gamma$ -Hydroxypropylmalonic acid, lactone of.  
 $p$ -Hydroxytolylidiphenylacetic acids, lactones of.  
 $\delta$ -Hydroxy- $\gamma$ -valerolactone- $\alpha$ -carboxylic acid.  
 $\alpha$ -Ketoangelicalactone.  
 $\alpha$ -Keto- $\gamma$ -hydroxybutane- $\alpha\gamma$ -dicarboxylic acid, lactone of.  
 $\alpha$ -Ketovalerolactone- $\alpha$ -carboxylic acid.  
 Lichestrone.  
 4-Methylasculetin.  
 4-Methylcoumarin.  
 4-Methyldaphnetin.  
 $\beta$ -Methylhexenolactone.  
 $\alpha$ -Methyl- $\delta$ -hexolactone.  
 $\beta$ -Methylhexolactone- $\alpha$ -carboxylic acid.  
 $\alpha$ -Methyl $\lambda$ evulolactone.  
 4-Methylumbelliferone.  
 Phenylbutyrolactoneacetic acid.  
 $\beta$ -Phthaloylglutaric acid, ketodilactone of.  
*iso*Pilocarpinolactone.  
 $\alpha$ -*iso*Propyl- $\beta$ -*iso*butylhydracrylic acid, lactone of.  
 Stillbene- $o$ -carboxylic acid, lactones of.

**Lactones.** See:—

- Trimethylhydroxybutanetricarboxylic acids, lactones of.  
 Valerolactoneacetic acid.  
 Valerolactonecarboxylic acids.  
**Lactose** (*milk sugar*), detection of, in milk (RIEGLER), A., ii, 206.  
 estimation of, in milk (RIEGLER), A., ii, 698.  
 estimation of, by polarisation and reduction, in milk (SCHEIBE), A., ii, 204.  
 estimation of, in condensed milk (S. H. R. and C. N. RIBER), A., ii, 355.  
 **$\beta$ -Lactylcarbamide.** See Hydrouracil.  
**Lævulose** (*d-fructose*), action of *Bacillus coli communis* on (HARDEN), T., 621; P., 1901, 57.  
**Lambs.** See Agricultural Chemistry.  
**Lamps** for spectra (BECKMANN), A., ii, 53, 81.  
**Lanthanum**, atomic weight of (BRAUNER and PAVLIČEK) P., 1901, 63.  
 nitrite (MATIGNON), A., ii, 61.  
**Lapachonone**, bromination of (MANUELLI), A., i, 216.  
**Lard**, American, behaviour of, with Halphen's test (SOLTSIEN), A., ii, 292, 430.  
**Lassallite** from Miramont (FRIEDEL), A., ii, 397.  
**Latent heats.** See Thermochemistry.  
**Laumontite** from the Caucasus (ZEMJAT-SCHENSKY), A., ii, 607.  
**Laurenone** and its oxime and hydroxyl-amino-oxime (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 7.  
 $n$ -**Lauric anhydride.** See  $n$ -Dodecoic anhydride.  
*iso***Lauronic acid.** See *iso*Campholytonic acid.  
**Lauronic acid** and its oxidation products (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 6.  
*iso***Lauronic acid**, preparation of (LEES and PERKIN), T., 341; P., 1900, 18.  
 constitution of (FORSTER), T., 110; (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 6; (BLANC), A., i, 10.  
 action of aluminium chloride on (LEES and PERKIN), T., 356.  
 oxidation products of (TIEMANN, KERSCHBAUM, and TIGGES), A., i, 6.  
*iso***Lauronic acid**, ethyl ester, nitrate of (WAHL), A., i, 663.  
 See also Campholytic acids.  
**Lead**, radio-active (HOFMANN and STRAUSS), A., ii, 19, 159, 385, 655.  
 electrolytic deposition of (GLASER), A., ii, 158.

- Lead**, melting point of (HOLBORN and DAY), A., ii, 85.  
 solid, diffusion of gold in, at the ordinary temperature (ROBERTS-AUSTEN), A., ii, 9.
- Lead amalgams** (FAY and NORTH), A., ii, 240.
- Lead salts**, behaviour of, in solution (v. ENDE), A., ii, 241.
- Lead fluoride**, behaviour of, in solution (JAEGER), A., ii, 386.  
 iodide and chloride, molten, electrolysis of (AUERBACH), A., ii, 590.  
 suboxide (TANATAR), A., ii, 451.  
 oxide, volatility of (STOERMER), A., ii, 654.  
 dioxide, estimation of, volumetrically, in red lead (LIEBIG), A., ii, 692.  
 silicates in pottery manufacture, solubility of (THORPE and SIMMONDS), T., 791; P., 1901, 113.  
 sulphate and double salts of, with alkalisulphates (ELBS and FISCHER), A., ii, 99.  
 sulpho-bromide, -chloride, and -iodide (LENHER), A., ii, 654.
- Lead organic compounds**:—  
 thiocyanate, action of, on the chloro-carbonates (DORAN), T., 906; P., 1901, 130.
- Lead, detection and estimation of**:—  
 detection of, in drinking waters (BELLOCQ), A., ii, 349.  
 estimation of, in cupriferos minerals with calcareous gangue (GUEROULT), A., ii, 130.  
 estimation of, in galena (WILLENZ), A., ii, 196.  
 estimation of soluble, in resinate-driers (HEFELMANN), A., ii, 532.  
 separation of, electrolytically, from manganese (MOLTKE-HANSEN), A., ii, 478.
- Leaves**. See Agricultural Chemistry.
- Lecithin** in brain and milk (BUROW), A., ii, 30.  
 optical activity of (ULPIANI), A., i, 491, 498.  
 influence of, on nutritive exchanges (CARRIERE), A., ii, 610.  
 of hens' eggs, influence of, in nutritive exchanges (DESGREZ and ZAKY), A., ii, 518.  
 influence of, on urinary constituents (ZAKY), A., ii, 673.  
 use of, in tuberculosis (CLAUDE and ZAKY), A., ii, 673.
- Ledouxite** from Mohawk mine, Michigan (RICHARDS), A., ii, 515.
- Leguminosæ**. See Agricultural Chemistry.
- "Leipzig poudrette."** See Agricultural Chemistry.
- Lemonal**, condensation of, with mesityl oxide (DURAND, HUGUENIN & Co. and PHILIPPE BARBIER), A., i, 727.
- Lemon camphor**. See Citraptene.
- Lemon juices**, composition and analysis of (SPAETH), A., ii, 584.
- Lemons**, oil of (BURGESS), P., 1901, 171; (THEULIER), A., i, 218; (v. SODEN), A., i, 733.  
 two new substances in (BURGESS), P., 1901, 171.  
 valuation of (WALTHER), A., ii, 49.
- Lepralin, Lepraridin, and Leprarinin** (ZOPF), A., i, 87.
- Leprarin-chloroform** (KASSNER), A., i, 283.
- Leucine**, derivatives of (FISCHER and FOURNEAU), A., i, 675.  
*i*- and *l*-ethyl esters and their picrates and *i*-acetyl derivative (FISCHER), A., i, 193.
- r*-**Leucine**, synthesis of (ERLENMEYER and KUNLIN), A., i, 468.
- l*-**Leucine** and *d*-**Leucinebenzenesulphonic acid** (FISCHER), A., i, 193.
- Leucinimide**, formation of, from oxy-hæmoglobin and globin (SALASKIN), A., i, 622.
- Leuco-bases**, sensitiveness of, to light (GROS), A., ii, 433.
- Leucocytes**, presence and localisation of iodine in (STASSANO and BOURCET), A., ii, 518.  
*rôle* of, in excretion (STASSANO), A., ii, 564.
- Leuco-eupittone** (*hexamethoxyleucaurine*) and its triacetyl derivative (LIEBERMANN and WIEDERMANN), A., i, 384.
- Leuconic acid**, energy of (COFFETTI), A., i, 29.
- Licareol**, constitution of (BARBIER), A., i, 731.
- Lichenostearic acids**,  $\alpha$ -,  $\beta$ -, and  $\gamma$ -, and **Lichestronic acid** and its lactone (HESSE), A., i, 86.
- Lichens** and their constituents (HESSE), A., i, 85, 149, 595; (ZOPF), A., i, 87, 546; (SALKOWSKI), A., i, 152.
- Ligament**, elastic, chemistry of (RICHARDS and GIES), A., i, 353.
- Light**, action of, on the development of etiolated plants (RICOME), A., ii, 120.  
 See also Photochemistry.
- Lilium bulbs**, mannose from (PARKIN), A., ii, 414.
- Lime**. See Calcium oxide.
- Limestone**, dolomitic, from Roumania (PONI), A., ii, 26.

- Limestones** of New York and their economic value (RIES), A, ii, 321.
- Lime trees.** See Agricultural Chemistry.
- ψ-Limonene** (SEMMLER), A., i, 331.
- Limonenol, Limonenone, and Limonoxime** (GENVRESSE), A., i, 281.
- Limonite** from Monte Valerio (MANNASSE), A., ii, 394.
- Linaloes oil** (SCHIMMEL & Co.), A., i, 395.
- Linseed meal.** See Agricultural Chemistry.
- Lipase** (KASTLE and LOEVENHART), A., i, 178; (LOEVENHART), A., ii, 253; (HANRIOT), A., ii, 562.  
hydrolytic action of (KASTLE and LOEVENHART), A., i, 178; (HANRIOT), A., ii, 175, 324.
- Liquefaction** of gaseous mixtures (CAUBET), A., ii, 147, 148.  
of a mixture of two gases (DUHEM), A., ii, 227.  
of helium (DEWAR), A., ii, 597.  
of hydrogen (TRAVERS), A., ii, 379.  
of pressed yeast (HARDEN and ROWLAND), T., 1227; P., 1901, 189.
- Liquid precipitates**, invisible liquid layers and surface tension of (QUINCKE), A., ii, 646.
- Liquids**, refractive indices of mixtures of (DE KOWALSKI), A., ii, 537.  
pure, dielectric constants of (TURNER), A., ii, 53.  
partially miscible, remarkable phenomena near the critical point of (FRIEDLANDER), A., ii, 643.  
relationship of viscosity of, to temperature and chemical constitution (BATSCHINSKI), A., ii, 645.  
and solutions, viscosity of mixtures of (LEES), A., ii, 148.  
latent heat of evaporation of (CROMPTON), P., 1901, 61.  
specific volume of, at infinite pressure (PAGLIANI), A., ii, 644.  
distinction between chemical and physical supersaturation of, by gases (BERTHELOT), A., ii, 8.  
organic, polymerisation of (GUYE and BAUD), A., ii, 437, 543.  
boiling points of some (LONGINESCU), A., ii, 640.  
apparatus for circulating, at constant temperature (DERBY), A., ii, 231.  
apparatus for the extraction of, by ether or chloroform (OSBORNE), A., ii, 136.
- Lithium salts**, combination of, with ammonia in aqueous solution (DAWSON and McCRAE), T., 501; P., 1901, 6.
- Lithium chloride**, action of, on crops (VOELCKER), A., ii, 269.
- Lithium chloride**, compounds of, with ammonia and amines (BONNEFOI), A., ii, 653.  
mercuric double iodide, nonohydrate of (DOBROSERDOFF), A., ii, 160.
- Lithium, estimation of:**—  
estimation of, in water (RANZOLI), A., ii, 423.
- Liveingite** from the Binnenthal (SOLLY and JACKSON), A., ii, 558.
- Liver**, studies on the (BÜRKER), A., ii, 178.  
amylolytic ferment of the (PREMIL-LEUX; DASTRE), A., ii, 325.  
influence of asphyxia on the glycogenic function of the (SEEGEN), A., ii, 522.  
sugar formation in the (BIAL), A., ii, 608.  
excretion of nitrogen after extirpation of the (LANG), A., ii, 407.  
composition of liquid from a hydatid cyst of the (MALMÉJAC), A., ii, 408.
- Lobaric acid** (HESSE), A., i, 645.
- Locusts** as manure (HUNCKEL D'HERCULAIS), A., ii, 342.
- London purple**, composition and analysis of (HAYWOOD), A., ii, 126.
- Lotase, Lotoflavin** and its tetracetyl derivative and trimethyl ethers, and **Lotusin** (DUNSTAN and HENRY), A., i, 39, 647.
- Lotus arabicus**, nature and origin of the poison of (DUNSTAN and HENRY), A., i, 39, 647.
- Lotusinic acid** (DUNSTAN and HENRY), A., i, 647.
- Luffa**, pentosans of (SCHONE and TOLLENS), A., ii, 414.
- Luminosity** caused by liquid hydrogen (DEWAR), A., ii, 598.  
obtained with certain organic compounds (DUBOIS), A., ii, 217.
- Lung**, autolysis of the (JACOBY), A., ii, 670.
- Lupetidine and isoLupetidine** (2.6-dimethylpiperidines), and their benzoyl, phenylcarbimide, phenyl-thiocarbimide, and benzenesulphonic derivatives (MARCUSE and WOLFFENSTEIN), A., i, 608.
- Lupetidine**, combination of, with hydrogen peroxide (MARCUSE and WOLFFENSTEIN), A., i, 608.
- Lupinus albus.** See Agricultural Chemistry.
- Lupulinic acid**,  $C_{25}H_{36}O_4$ , and the  $\alpha$ -acid, and the acid  $C_{15}H_{20}O_3$  from it (BARTH), A., i, 40.
- Luteo-cobalt compounds.** See under Cobalt.

- Luteolin**, synthesis of (V. KOSTANECKI, RÓŻYCKI, and TAMBOR), A., i, 92; (V. KOSTANECKI), A., i, 335; (DILLER and V. KOSTANECKI), A., i, 476.  
 constitution of (V. KOSTANECKI), A., i, 335.  
 methyl ether of (DILLER and V. KOSTANECKI), A., i, 476.
- Lutidine**, compounds of, with metallic salts (TOMBECK), A., i, 164, 266.  
 See also Dimethylpyridines.
- $\alpha$ -Lutidine**, compounds of, with cupric salts (TOMBECK), A., i, 267.
- $\psi$ -Lutidostyryl** and its 3:5-dibromo- and 3- and 5-nitro-derivatives (MOIR), P., 1901, 69.
- Lymph**, properties and origin of (ASHER and BUSCH), A., ii, 29.  
 calcium and sodium citrates in the coagulation of (SABBATANI), A., ii, 175.
- Lymph hearts** of the frog, effect of ions on the contraction of the (MOORE), A., ii, 257.
- M.**
- Magnesium**, polarisation of, in alkaline solutions (CAMPETI), A., ii, 590.  
 reducing properties of (DUBOIN), A., ii, 315.  
 change in the chemical properties of, when alloyed with mercury (LE BON), A., ii, 20.
- Magnesium alloys** with aluminium (BOUDOUARD), A., ii, 512.
- Magnesium aluminate** (DUFAY), A., ii, 553.  
 borate (OUVRARD), A., ii, 158.  
 chloride, double salt of, with antimony pentachloride (WEINLAND and SCHLEGELMILCH), A., ii, 661.  
 and potassium chlorides and sulphates, maximum vapour pressure of solutions of, at 25° (VAN'T HOFF and V. EULER-CHELPI), A., ii, 249.  
 indate (RENZ), A., ii, 657.  
 nitride, formation of (KIRCHNER), A., ii, 450.  
 formation of, by heating magnesium in air (EIDMANN and MOESER), A., ii, 240.  
 pyrophosphate, bleaching of, by conversion into the pyrosulphophosphate (PELLET), A., ii, 532.  
 potassium acid sulphate,  $\text{KHMg}(\text{SO}_4)_2 + 2\text{H}_2\text{O}$  (MEYERHOFFER and COTRELL), A., ii, 552.
- Magnesium organic compounds** (GRIGNARD), A., i, 263; (TISSIER and GRIGNARD), A., i, 316, 440.
- Magnesium organic compounds**, synthesis of acids, alcohols, and hydrocarbons by means of (GRIGNARD), A., i, 679.  
 action of acid anhydrides and chlorides on (TISSIER and GRIGNARD), A., i, 316.  
 action of, on alkyl esters (BEHAL), A., i, 246; (MASSON), A., i, 249; (GRIGNARD), A., i, 250.  
 action of esters of dibasic acids on (VALEUR), A., i, 317.  
 action of, on naphthyl methyl ketones (GRIGNARD), A., i, 393.  
 ethereal derivatives of (BLAISE), A., i, 317.  
 use of, in the synthesis of tertiary cyclic alcohols (ZELINSKY), A., i, 660.  
 new reactions of (MOUREU), A., i, 317.  
 ferricyanides (FISCHER and MÜLLER), A., i, 455.
- Magnesium, estimation of:**—  
 estimation of, by organic bases (HERZ and DRUCKER), A., ii, 348; (HERZ), A., ii, 478.  
 estimation of, in presence of much iron oxide (PELLET), A., ii, 477.  
 estimation of, in waters (WINKLER), A., ii, 347.
- Magnetic field**, behaviour of hæmoglobin compounds in a (GAMGEE), A., i, 782.  
 rotation. See Photochemistry.  
 susceptibility, temperature coefficient of the, of some salt solutions of the iron group (MOSLER), A., ii, 643.
- Magnetism** and atomic weight (ERRERA), A., ii, 83.
- Magnetite ores**, estimation of iron in, by the specific gravity test (RICHARDS), A., ii, 132.
- Maize** and **Maize-germ molasses**. See Agricultural Chemistry.
- Maize oil** (*corn oil*), constitution of (VULTÉ and GIBSON), A., ii, 360.
- $\beta$ -Malamic acids**, *d*-, *l*-, and *i*-, and their salts, methyl ester and amides (LUTZ), A., i, 7.
- Maleanil** and **Maleanilide** and its hydrochloride (VAN DORP and VAN HAARST), A., i, 137.
- Maleic acid**, transformation of, into fumaric acid (SCHMIDT), A., i, 63.
- Malephenylamic acid**, action of phosphorus oxychloride on (VAN DORP and VAN HAARST), A., i, 137.
- Malic acid**, rotation dispersion of (WORINGER), A., ii, 214.  
 action of formaldehyde on (ALBERDA VAN EKENSTEIN), A., i, 120.



- Malic acid**, acyl derivatives, ethyl esters, molecular rotation of (REITER), A., ii, 214.  
estimation of, in wine (HILGER), A., ii, 290.
- L-Malic acid**, salts, influence of molybdic acid and molybdates on the specific rotation of (IRZIG), A., i, 580.
- Malonic acid**, ethyl ester, action of bromine and carbon disulphide on the sodium derivative of (WENZEL), A., i, 402.  
action of ethyl citraconate, crotonate, and fumarate on (MICHAEL), A., i, 124.  
and ketones, action of sodium ethoxide on a mixture of (STOBBE), A., i, 549.
- Malonic acid**, bromo-, methyl ester, action of tertiary bases on (WEDEKIND), A., i, 504.  
nitro-, ethyl ester, and its sodium and potassium derivatives (WAHL), A., i, 445.
- Malonyl-mono- and -di-methylcarbamides**, imino-(4-imino-2,6-dioxy-1-mono- and -1:3-di-methylpyrimidines), and their isonitroso-derivatives (TRAUBE), A., i, 762.
- Malt**, a proteolytic and a rennet-like ferment in (WEIS), A., ii, 69.  
germs. See Agricultural Chemistry.  
kilns, estimation of arsenic in dust, tiles, &c., from (FAIRLEY), A., ii, 577.
- Maltase**, yeast, synthetic action of (EMMERLING), A., i, 258, 624; (HILL), A., i, 452.  
action of chemical agents on (BOKORNY), A., ii, 438, 568.
- Maltoglucose** secreted by *Monilia sitophila* (WENT), A., ii, 412.
- Maltol**, occurrence of, in the needles of *Abies alba* (FEUERSTEIN), A., ii, 526.
- Maltose**, isolation of, when mixed with glucose (HILL), P., 1901, 45.  
heat of fermentation of (BROWN), A., ii, 304.  
absorption of (REID), A., ii, 458.
- iso*Maltose in blood, muscle, and urine (PAVY and SIAU), A., ii, 257.
- Maltosuria** in a diabetic patient (LÉPINE and BOULUD), A., ii, 409.
- Man**, capacity of, to adapt himself to high and low temperatures (RUBNER), A., ii, 173,  
metabolism in (LOEWY and MÜLLER), A., ii, 609.
- Mandelic acid**, bimolecular anhydride of (EINHORN and PFEIFFER), A., i, 712.
- Mandragora roots**, alkaloids from (THOMS and WENZEL), A., i, 405; (HESSE), A., i, 740.
- Mandragorine** (HESSE), A., i, 741.
- Manganese alloy** with aluminium (BRUNCK), A., ii, 656.
- Manganese alums** (CHRISTENSEN), A., ii, 512.
- Manganese mercury double iodide**, hexahydrate of (DOBROSERDOFF), A., ii, 103.  
oxides (CHRISTENSEN), A., ii, 512.  
sulphate, temperature coefficient of susceptibility of solutions of (MOSLER), A., ii, 643.
- Permanganates**, the colour of solutions of (VAILLANT), A., ii, 596.
- Manganic meta- and pyro-phosphates** (AUGER), A., ii, 554.
- Manganous chloride**, compounds of, with cupric oxide (MAILHE), A., ii, 601.  
sulphate and its hydrates, solubility of (COTTRELL), A., ii, 12; (RICHARDS and FRAPRIE), A., ii, 553.
- Manganese**, detection, estimation and separation of:—  
detection and estimation of minute quantities of (MARSHALL), A., ii, 350.  
modification of Williams' method for estimating (BOLLING), A., ii, 626.  
estimation of, as phosphate (DAKIN), A., ii, 131.  
estimation of, in ferro-chromium alloys (T.), A., ii, 283.  
estimation of, in ferro-manganese (NORRIS), A., ii, 579.  
estimation of, in tungsten alloys (LEBOTSON and BREARLEY), A., ii, 198.  
separation of, electrolytically, from lead (MOLTKE-HANSEN), A., ii, 478.
- Manganese minerals** from Hautes-Pyrénées (LACROIX), A., ii, 395.
- Manganese ore deposits** of Queluz, Brazil (DERBY), A., ii, 558.
- Manganhedenbergite** from Ceylon (COOMARA-SWAMY), A., ii, 172.
- Manganocalcite** from Gross-Tresny, Moravia (KOVÁŘ), A., ii, 606.
- Mangolds**. See Agricultural Chemistry.
- Manna** of olive trees (TRABUT), A., ii, 184; (BATTANDIER), A., ii, 268.
- Mannitol**, relation between the solubility and heat of solution of (CAMPETTI), A., ii, 642.  
action of *Bacillus coli communis* on (HARDEN), T., 621; P., 1901, 58.  
an enzyme which produces (GAYON and DUBOURG), A., i, 784.

- Mannitol**, nitro-derivatives of, comparison of, with nitrocelluloses (VIGNON and GERIN), A., i, 662.
- d-Mannitol** triacetal and triformal, thermochemical data of (DELÉPINE), A., i, 4.
- Mannose** from *Lilium* bulbs (PARKIN), A., ii, 414.
- Manometer**, new (RAYLEIGH), A., ii, 542.
- Manures**, estimation of phosphoric acid in (v. LORENZ), A., ii, 278; (LEDOUX), A., ii, 576.  
See also Agricultural Chemistry.
- Margarine**, cryoscopic distinction between butter and (PESCHGES), A., ii, 630.  
detection of Ceylon oil in (INDEMANS), A., ii, 78.  
estimation of butter-fat in (REPORT OF JOINT COMMITTEE), A., ii, 77.
- Marl**, natural history of (DAVIS), A., ii, 516.
- Marmot**, respiration and temperature of the (PEMBREY), A., ii, 608.
- Marshite** from Broken Hill, New South Wales (SPENCER), A., ii, 394.
- "Martellin."** See Agricultural Chemistry.
- Mass action**. See under Affinity.
- Maxwell's law**,  $K=n^2$ , in reference to the molecular structure of substances (BATSCHINSKI), A., ii, 595.
- Meat**, composition and nutritive value of different kinds of (BEYTHIEN), A., ii, 177.  
salted, red colour of (HALDANE), A., ii, 462.
- Meat extract** (JUNG), A., ii, 258.
- Medicines**, cryoscopic testing of (v. POEHL), A., ii, 211.
- Meerschau**m from Bosnia (KIŠPATIO), A., ii, 321.
- Melamine** (*cyanurtriamide*), absorption spectra of (HARTLEY, DOBBIE, and LAUDER), T., 860; P., 1901, 125.
- Melaninic acid**, oxidation of (JONES and AUER), A., i, 554.
- Melanins**, nature of (DUCCESCHI), A., i, 354.
- Melanoidin**, physiological action of (ROSENFELD), A., ii, 180.
- Melite** (ZAMBONINI), A., ii, 397.
- Melitrise** (*melitose*). See Raffinose.
- Mellitic acid** (VERNEUIL), A., i, 546.
- Melonite** from Worturpa, South Australia (DIESELDORFF), A., ii, 393.
- Melting point**, relation between atomic weight, atomic volume and (BAYLEY), A., ii, 497.  
relation between expansion and, of metals (LÉMERAY), A., ii, 145.
- Melting point** of alums (LOCKE), A., ii, 657.  
of aliphatic diamines, regularities in the (KAUFLER), A., i, 259.  
of reciprocal salt pairs (MEYER-HOFFER), A., ii, 639.
- Melting point determinations**, improved apparatus for (STREITFELD and DAVIES), A., ii, 302.
- Memorial lecture**: Rammelsberg (MIERS), T., 1; P., 1900, 219.
- Menthene**, active (KONDAKOFF and BACHTSCHÉEFF), A., i, 335.
- Δ<sup>6</sup>-Menthene-2-one** and its mono- and di-oximes, oxaminoxime, oxalate, and semicarbazone, and its reduction products (HARRIES and STIRM), A., i, 551.
- Menthol**, action of benzaldehyde on the sodium derivative of (MARTINE), A., i, 599.  
action of formaldehyde on (WEDEKIND), A., i, 393, 731.  
halogen derivatives of, and the hydrocarbons from them (KURSANOFF), A., i, 553.
- Menthols**, isomeric (KONDAKOFF and BACHTSCHÉEFF), A., i, 334.
- Menthone**, exhaustive bromination of (v. BAEYER and SEUFFERT), A., i, 216.
- Menthyl chlorocarbonate** (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 662.  
chloromethyl oxide (WEDEKIND), A., i, 393, 731.
- β-naphthyl methylene ether** (WEDEKIND), A., i, 393.  
iodides, isomeric (KONDAKOFF and BACHTSCHÉEFF), A., i, 334.
- Mercaptan**,  $C_5H_4ONS$ , from benzylidenecaniline and thioacetic acid (EIBNER), A., i, 321.
- Mercaptans**. See also :—  
Acetylphenyl-α-aminotrichloroethylhydrosulphide.  
Amyl mercaptan.  
5-Benzylmercapto-2-phenylimino-3-phenyloxydiazoline.  
α-Diethylthiol-α-phenylethane.  
1:4-Diphenyl-5-thio-1:2:4-triazolone-3-thiol.  
1:4-Diphenyl-1:2:4-triazolone-3-thiol.  
1:4-Diphenyl-1:2:4-triazolone-3-thio-methane.  
Ethyl mercaptan.  
2-Mercapto-4:5-dimethylthiazoline.  
Methyl mercaptan.  
Methylmercaptotetrazol.  
Phenyldihydropyrimidyl mercaptan.  
Phenylmercaptotetrazole.  
2-Phenyl-1-methylmercaptotriazole.

**Mercaptans.** See:—

4-Phenyl-1-*a*-naphthylthiotriazolone-thiol.

Phenylthiodiazoloneanilthiol.

Phenylthiodiazoloneethiomethanes.

4-Phenyl-*p*-tolyl-5-thio-1:2:4-triazolone-3-thiols.

Tetraethylthiolbutane.

Tetrazelethiol.

*p*-Tolylthiodiazoloneanilthiol.

*p*-Tolylthiodiazoloneethiomethane.

1:4:5-Triphenyldihydro-1:2:4-triazole-3-thiomethane.

*m*-Xylol mercaptan.

**2-Mercapto-4:5-dimethylthiazoline**

(STRAUSS), A., i, 18.

**Mercaptoles** from diketones (POSNER), A., i, 14; (TARBOURIECH), A., i, 329.

from ketonic acids (POSNER), A., i, 703.

**Mercerised cotton**, action of aqueous ammonia on (THIELE), A., i, 634.

**Mercury**, equilibrium between the different stages of oxidation of (ABEL), A., ii, 377.

solution of solid metals in (BERTHELOT), A., ii, 241.

direct introduction of, into aromatic compounds (DIMROTH), A., i, 439.

aluminium couple, use of, as a halogen carrier (COHEN and DAKIN), T., 1111; P., 1901, 91.

damage done to green plants by (DAFERT), A., ii, 269; (COUPIN), A., ii, 335.

alteration in the chemical properties of, when alloyed with magnesium (LE BON), A., ii, 20.

**Mercury alloys** (*amalgams*) with ammonium (COEHN), A., ii, 155.

with cadmium (ROOZEBOOM), A., ii, 507.

with calcium (SCHÜRGER), A., ii, 97.

with lead (FAY and NORTH), A., ii, 240.

with silver, heat of formation of (BERTHELOT), A., ii, 156.

with uranium (FÉRÉE), A., ii, 514.

**Dimercuriammonium salts** (RAY), P., 1901, 96.

**Mercury salts**, comparison of the action of reducing agents on (BENNETT), A., ii, 131; (T. and C. T. TYRER), A., ii, 693.

iodoantimonide (GRANGER), A., ii, 386.

haloid salts, solubility of, in organic solvents (SULC), A., ii, 101.

manganese double iodide, hexahydrate of (DOBROSERDOFF), A., ii, 103.

sulphide, action of hydrogen on (PÉLABON), A., ii, 545, 656.

**Mercury:—**

**Mercuric salts**, reduction of, by hydrogen peroxide (KOLB), A., ii, 160.

chloride and its double salts, toxic value of (CLARK), A., ii, 526.

compound of, with cupric oxide (MAILHE), A., ii, 601.

estimation of, in dressings (FRIEDRICH), A., ii, 204; (ÜTZ), A., ii, 348.

fluoride, behaviour of, in solution (JAEGER), A., ii, 386.

iodide, modifications of (DOBROSERDOFF), A., ii, 509.

types of double salts of, with iodides of metals of different valencies (DOBROSERDOFF), A., ii, 510.

formation of two kinds of mixed crystals of silver iodide and (ROOZEBOOM), A., ii, 20.

double salts of, with the iodides of cobalt and nickel (DOBROSERDOFF), A., ii, 510.

double salt of, with lithium iodide, nonahydrate of (DOBROSERDOFF), A., ii, 160.

double salts of, with potassium iodide (PAWLOFF), A., ii, 101.

oxide, action of, on aqueous solutions of metallic salts (MAILHE), A., ii, 452, 509; (RECOURA), A., ii, 508; (ANDRÉ), A., ii, 509.

**Mercurous compounds**, reduction of, by animal tissues (SOAVE), A., ii, 101.

chloride, alleged volatility of, at 37° (SOAVE), A., ii, 101.

nitrite (RAY), A., ii, 452.

**Mercury organic compounds** (A. and L. LUMIÈRE and PERRIN), A., i, 356; (DIMROTH), A., i, 439.

**Mercury salts**, compounds of, with diethylarsine and tetraethyldiarsonium (BIGINELLI), A., i, 20.

**Mercuric haloids**, compounds of, with ethylene and-allyl alcohol, constitution of (SAND), A., i, 458.

cyanide, solubility of, in organic solvents (SULC), A., ii, 101.

**Mercuribenzoic acid**, chloro- (MICHAELIS and RICHTER), A., i, 356.

*o*-**Mercuridibenzoic acid**, and its calcium salt (PESCI), A., i, 624.

*o*-**Mercuridiphenol** (DIMROTH), A., i, 439.

**Mercurio- and Mercuri-diethylene oxide** and the mercurichloride and picrate of the mercuri-compound (SAND), A., i, 682.

**Mercury organic compounds:—**

**Mercuriguaiacolsulphonic acid**, sodium salt (A. and L. LUMIERE and PERRIN), A., i, 356.

**Mercuriphenoldisulphonic acid**, sodium salt, as an antiseptic (A. and L. LUMIERE and CHEVROTIER), A., i, 244.

**Substances**,  $C_6H_{10}O_2Hg_2$  and  $C_6H_{10}O_2Hg$ , from dipropylene oxide mercuric bromide (SAND), A., i, 682.

**Mercury, estimation of:—**

detection of, in urine (BARDACH), A., ii, 579.

estimation of, in officinal *hydrargyrum salicylicum* (RUPP), A., ii, 348.

estimation of, in ammoniated mercury and other mercury compounds (BENNETT), A., ii, 131; (T. and C. T. TYRER), A., ii, 693.

electrolytic separation of, from copper (SPARE and SMITH), A., ii, 692.

**Mercury meniscus**, value of the correction for the (WINKLER), A., ii, 574.

**Merendera**. See Agricultural Chemistry.

**Mesaconic acid** (*propylenedicarboxylic acid*), esters, action of diazomethane on (v. PECHMANN and BURKARD), A., i, 168.

menthyl ester (COHEN and WHITELEY), T., 1310; P., 1900, 213.

**Mesitylene** (1:3:5-*trimethylbenzene*), bromination and iodination of (EDINGER and GOLDBERG), A., i, 23. nitroso- (BAMBERGER and RISING), A., i, 142.

**Mesitylenic acid**,  $\alpha$ - and  $\beta$ -*dinitro*- and *nitroamino*- (BAMBERGER and DEMUTH), A., i, 209.

**Mesitylhydroxylamine** (BAMBERGER and RISING), A., i, 141.

**Mesityl methyl ketone**, oxidation of (VAN SCHERPENZEEL), A., i, 328.

**Mesityl oxide** (*methyl isobutenyl ketone*; *isopropylidenacetone*), action of chloroplatinic acid on (PRANDTL and HOFMANN), A., i, 13.

action of, on ethyl sodiomethylmalonate (CROSSLEY), T., 139; P., 1900, 90.

condensation of, with lemonal (DURAND, HUGUENIN & Co. and PHILIPPE BARBIER), A., i, 727.

sulphonal derivatives of (POSNER), A., i, 474.

**Mesityl- $\psi$ -quinol** and its benzoyl derivative (BAMBERGER and RISING), A., i, 141, 142.

**Mesoacridine**, bromo- and iodo- (EDINGER), A., i, 166.

**Mesolite** from Golden, Colorado (PATON), A., ii, 455.

**Mesoporphyrin** and its hydrochloride (NENCKI and ZALESKI), A., i, 434.

**Mesotartaric acid**, action of formaldehyde on (ALBERDA VAN EKENSTEIN), A., i, 120.

**Mesothioacidone** and its benzyl and benzoyl derivatives (EDINGER), A., i, 166.

**Metabolism** during training (LICHTENFELT), A., ii, 609.

influence of sugar as food on (v. BUNGE), A., ii, 458.

effect of the withholding of water on (SPIEGLER), A., ii, 458.

carbohydrate, in winter leaves (CZAPEK), A., ii, 571.

gaseous, of the submaxillary gland (BARCROFT), A., ii, 28, 609.

hepatic, influence of drugs on (NOËL PATON and EASON), A., ii, 253.

proteid, and alcohol (ROSEMANN), A., ii, 668.

and muscular work (BORNSTEIN; CASPARI), A., ii, 254.

in Cephalopods (v. FÜRTH), A., ii, 115.

in children, influence of boric acid and borax on (TUNNICLIFFE and ROSENHEIM; GRÜNBAUM), A., ii, 517.

influence of formaldehyde on (TUNNICLIFFE and ROSENHEIM), A., ii, 517.

in dogs with shortened small intestine (ERLANGER and HEWLETT), A., ii, 609.

before and after removal of the spleen (NOËL PATON), A., ii, 29.

and digestion in Echinoderms (COHNHEIM), A., ii, 668.

in horses (ZUNTZ), A., ii, 177.

in the pig during feeding with sugar, starch and molasses (MEISSEL and BERSCH), A., ii, 668.

in forced feeding (WHITE and SPRIGGS), A., ii, 28, 253.

in gout (WATSON), A., ii, 68.

in man (LOEWY and MÜLLER), A., ii, 609.

of creatinine (MACLEOD), A., ii, 115.

of hippuric acid (JOLLES), A., ii, 115; (LEWIN), A., ii, 518.

of nuclein (LOEWY), A., ii, 325.

of proteid (LICHTENFELT), A., ii, 609.

**Metal-ammonium compounds**, nature of, in aqueous solution (DAWSON and McCRAE), T., 493, 1069, 1072; P., 1901, 5, 177, 178.

**Meta law**, the (LAPWORTH), T., 1270; P., 1900, 108, 132; 1901, 2.

**Metachlorophyllins**. See under Chlorophyllin.

- Metallic chlorides**, action of hypochlorous acid on (V. TIESENHOLT), A., ii, 154; (FOERSTER), A., ii, 310.  
 compounds of, with methylsulphide (PHILLIPS), A., i, 444.  
 compounds, reducing action of carbon on (BOUDOUARD), A., ii, 314.  
 hydroxides, solubility of some, in ammonium and sodium salicylate (WOLFF), A., ii, 198.  
 iodides, velocity of reaction and polymolecular transformations between, and ferric salts, chromic acid, or nitrous acid (SCHUKAREFF), A., ii, 647.  
 oxide or hydroxide, action of, on solutions of salts of other metals (RECOURA), A., ii, 508; (SABATIER; ANDRÉ), A., ii, 509.  
 oxides and salts, reduction of, by calcium carbide and silicon carbide (NEUMANN; V. KÜGELGEN), A., ii, 98.  
 salts, slightly soluble, heat of formation of (KLEIN), A., ii, 225.  
 specific absorption of X-rays by (BENOIST), A., ii, 215, 216, 308; (HÉBERT and REYNAUD), A., ii, 215.  
 action of cupric hydroxide on solutions of (MAILHE), A., ii, 601.  
 action of mercuric oxide on aqueous solutions of (MAILHE), A., ii, 452, 509; (RECOURA), A., ii, 508; (ANDRÉ), A., ii, 509.  
 action of sodium thiosulphate on solutions of, at high temperature and pressure (NORTON), A., ii, 624.  
 toxic action of, on plants (COUPIN), A., ii, 122, 335, 525; (DEHÉRAIN and DEMOUSSY), A., ii, 266; (DAFERT), A., ii, 269; (CLARK), A., ii, 526.  
 compounds of, with aromatic amines (TOMBECK), A., i, 135, 164, 266.  
 sulphates, action of cupric hydroxide on (RECOURA), A., ii, 508; (SABATIER; ANDRÉ), A., ii, 509.  
 sulphides, thermoelectric behaviour of some (VAN AUBEL), A., ii, 222.  
 precipitation of, with sodium thiosulphate (DONATH), A., ii, 424.
- Metalliferous deposits** of Canton Grisons (TARNUZZER, NUSSBERGER, and LORENZ), A., ii, 319.
- Metalloids**, action of potassammonium and sodammonium on (HUGOT), A., ii, 18.
- Metals**, arc spectra of some, as influenced by an atmosphere of hydrogen (CREW), A., ii, 31.
- Metals**, secondary radio-activity of (BECQUEREL), A., ii, 215; (CURIE and DEBIERNE), A., ii, 216.  
 thermal and electrical conductivity, thermal capacity, and thermoelectric efficiency of some (JAEGER and DIESSELHORST), A., ii, 84.  
 electro-affinity of the (DAWSON and MCCRAE), A., ii, 222.  
 electrochemical relations between the allotropic modifications of (BERTHELOT), A., ii, 301.  
 determination of the specific heat of, by their rate of cooling (SERDOBINSKY and EMELIANOFF), A., ii, 303.  
 relation between expansion and melting point of (LÉMERAY), A., ii, 145.  
 hardness of (BENEDICKS), A., ii, 374.  
 solid, solution of, in mercury and fused metals (BERTHELOT), A., ii, 241.  
 action of alcohols on (MALMÉJAC), A., i, 248.  
 action of ammonia on, at high temperatures (BEILBY and HENDERSON), T., 1245; P., 1901, 190.  
 chemical action between dry hauerite and (STRUVER), A., ii, 317.  
 action of, in transforming nitro-compounds into amino-derivatives (SABATIER and SENDERENS), A., i, 638.  
 fixation of, by cell walls (DEVAUX), A., ii, 571.  
 detection of, by the absorption spectra of their compounds with alkanna (FORMÁNEK), A., ii, 128.  
 detection of minute quantities of, in natural waters (GARRIGOU), A., ii, 75.  
 estimation of, by organic bases (HERZ), A., ii, 240, 478; (HERZ and DRUCKER), A., ii, 348.  
 separation of, by means of acetylene (SODERBAUM), A., ii, 197.
- Metaphosphoric acid**. See under Phosphorus.
- Metasilicic acid**. See under Silicon.
- Meta-substitution** outside the nucleus (LAPWORTH), T., 1272; P., 1900, 108; 1901, 2.  
 in benzenoid amines (LAPWORTH), P., 1901, 2.
- Metathioboric acid**. See under Boron.
- Metathoric acid**. See under Thorium.
- Meteoric iron** from Alt-Béla, Moravia (SMYČKA), A., ii, 607.  
 from Kokstad, Bethanien, and Muchachos (COHEN), A., ii, 399.  
 compact and granular (COHEN), A., ii, 251.

- Me** site from Ceylon (MEUNIER), A., ii, 2.  
 from Ançon, France (MEUNIER), A., ii, .  
 from Kesen (DAVISON), A., ii, 172.  
 from Zomba, British Central Africa (FLETCHER), A., ii, 400.
- Methacetin** (*p*-acetylanisidine), colour reaction of, with potassium permanganate (MAAS), A., ii, 210.
- Methæmoglobin**. See under Hæmoglobin.
- Methanal**. See Paraformaldehyde under Formaldehyde.
- 1-Methanal-2-naphthylol**. See  $\beta$ -Hydroxy- $\alpha$ -naphthaldehyde.
- Methane**, production of, by the direct union of carbon and hydrogen (BONE and JERDAN), T., 1042; P., 1901, 162.  
 decomposition of, at high temperatures (BONE and JERDAN), P., 1901, 165.  
 absorption of, from the atmosphere by plants (URBAIN), A., ii, 273.  
 oxidation of nitrogen as a source of error in the estimation of (WHITE), A., ii, 622.
- 3-Methenementhane** (GRIGNARD), A., i, 681.
- Methi-isomorphimethine** and its methiodide, and the action of heat on the methohydroxide (SCHRUYER and LEES), T., 577; P., 1901, 55.
- $\beta$ -Methoxyacrylic acid**,  $\alpha$ -cyano-, methyl and ethyl esters (DE BOLLEMONT), A., i, 117.
- p*-Methoxyatrolactic acid** (BOUGAULT), A., i, 721.
- o*-Methoxyazobenzene** (BAMBERGER), A., i, 107.
- 1-Methoxybenzene**, 3-chloro-5-nitro- (DE KOCK), A., i, 460.  
 chloronitrocycano- (VAN HETEREN), A., i, 460.
- w*-*o*-Methoxybenzoyl-3-ethoxyacetophenone** (v. KOSTANECKI and TAMBOR), A., i, 558.
- 2-Methoxybenzylacetophenone** and its *o*-nitrophenylhydrazone (FEUERSTEIN and MUSCULUS), A., i, 279.
- p*-Methoxybenzylidene-*p*-anisidine** (HANTZSCH and SCHWAB), A., i, 379.
- Methoxycarminonecarboxylic acid**, di-bromo-, methyl ester (LIEBERMANN and LANDAU), A., i, 545.
- Methoxycarminonedicarboxylic acid**, chloro- and bromo-, methyl esters (LIEBERMANN and LANDAU), A., i, 545.
- Methoxycaronic acid** and anhydride (PERKIN and THORPE), T., 761.
- 7-Methoxycoumarone-4-carboxylic acid** and its methyl ester (v. PECHMANN and GRAEGER), A., i, 286.
- 7-Methoxy-2:3-dimethylchromone** (v. KOSTANECKI and LLOYD), A., i, 736.
- 3-Methoxy-2:6-dimethylphenetriol** and its triacetyl derivative (BOSSE), A., i, 207.
- 1-Methoxydiphenyl** (HÖNIGSCHMID), A., i, 700.
- Methoxyethoxybenzene**, 1:2- and 2:1-, 4-amino- and their acetyl derivatives, and 4-nitro- (WISINGER), A., i, 205.
- Methoxyethoxy-silicon dichloride** and *isobutyloxysilicon* chloride (KIPPING and LLOYD), T., 458; P., 1901, 32.
- 6-Methoxy-2-ethylchromone** (v. KOSTANECKI, TAMBOR, and ORTH), A., i, 558.
- Methoxy-group**, orientating influence of the, on the nitro-group (KAUFLER and WENZEL), A., i, 590.
- 4-Methoxyhydrindene** (MOSCHNER), A., i, 374.
- Methoxymethylenecyanoacetic acid**. See  $\beta$ -Methoxyacrylic acid,  $\alpha$ -cyano-.
- 13-Methoxy-10-methylphenanthrazine** (KAUFLER and WENZEL), A., i, 590.
- 9-Methoxy-10-methyl-7-phenylnaphthazonium salts** (FISCHER and BRUHN), A., i, 417.
- 2-Methoxy-4-methylpyrimidine**, 5-amino- (GABRIEL and COLMAN), A., i, 428.
- 9-Methoxy-10-methylrosindone** (FISCHER and BRUHN), A., i, 417.
- Methoxynaphthylidenecamphor** (HELBRONNER), A., i, 600.
- Methoxyphenacetin** (FREYSS), A., i, 321.
- m*-Methoxyphenoxyacetic acid** (GILBODY, PERKIN, and YATES), T., 1399; P., 1899, 27, 75, 241; 1900, 105.
- Methoxyphenylethenylcyclootriazan** (VOSWINCKEL), A., i, 53.
- Methoxyphenylglyoxylic acid**, *p*-amino- (BOEHRINGER & SONS), A., i, 714.
- Methoxyphenylhydrazonocyanoacetic acids**, *o*- and *p*-, and their esters and salts (LAX), A., i, 230.
- Methoxy-1-phenylmethylbenzoxazole** (HENRICH), A., i, 464.
- 2-Methoxy-5-isopropyl-1:4-benzoquinone**, 3:6-di-bromo- (HOFFMANN), A., i, 474.
- 2- $\gamma$ -Methoxypropyldihydroisindole** and its aurichloride (FRÄNKEL), A., i, 45.
- p*-Methoxystyrene**,  $\alpha\beta$ -dichloro- (KUNCKEL and ERAS), A., i, 75.
- 8-Methoxy-2:3:5-trimethylquinoxaline** (KAUFLER and WENZEL), A., i, 590.

- p-Methoxytriphenylacetic acid** and its methyl ester and bromo-derivative (BISTRZYCKI and NOWAKOWSKI), A., i, 716.
- Methyl acetyl- and benzoyl-iminodithiocarbonates** (WHEELER and MERIAM), A., i, 514.
- Methyl alcohol**, presence of, in the fermented juice of fruits (WOLFF), A., i, 110.  
vapour pressure of, when mixed with aqueous salt solutions (WREWSKY), A., ii, 56.  
molecular volume of, in organic solvents (CARRARA and LEVI), A., ii, 3.  
esterification of, by nitrophthalic anhydride (MCKENZIE), T., 1140; P., 1901, 186.  
influence of, as solvent, on the rotation of ethyl tartrate (PATTERSON), T., 173; P., 1900, 176.  
absence of, in rum (WOLFF), A., i, 110; (QUANTIN), A., i, 111.  
compound of, with methyl iodide (MEUNIER), A., i, 442.  
detection of, in presence of ethyl alcohol (PRESCOTT), A., ii, 581.  
detection of, in mixtures (MULLIKEN and SCUDDER), A., ii, 43.  
detection of, in vinegar (ROBINE), A., ii, 353, 480.
- Methyl chloride**, magnetic rotation of (SIERTSEMA), A., ii, 5.
- Methyl ether**, preparation of (NEWTH), T., 917; P., 1901, 147.  
and hydrogen chloride, mixtures of (KUENEN), A., ii, 146.
- Methyl ether**, *mono-* and *s-di-*bromo- and -chloro-, and their compounds with pyridine and trimethylamine (LITTERSCHEID), A., i, 443.
- Methyl ethyl thiocarbonate diphenylsemicarbazone** (WHEELER and DUSTIN), A., i, 26.  
iodide, compound of, with methyl alcohol (MEUNIER), A., i, 442.  
hydroperoxide and its barium salt (v. BAeyer and VILLIGER), A., i, 309.  
mercaptan from albumin (NENCKI), A., i, 242.  
sulphate (BLACKLER), A., i, 577.  
sulphide, compounds of, with metallic chlorides (PHILLIPS), A., i, 444.
- Methyl-acetaldoxime and -isoacetaldoxime** and the hydrolysis and reduction of the *iso*-compound (DUNSTAN and GOULDING), T., 635; P., 1901, 84.
- Methylacetone**. See Methyl ethyl ketone.
- Methylacetonedicarboxylic acid**, cyano-, ethyl ester (DERÔME), A., i, 313.
- Methyl-acetophenoxime and -isoacetophenoxime** and the hydrolysis and reduction of the *iso*-compound (DUNSTAN and GOULDING), T., 637; P., 1901, 84.
- Methyl-acetoxime and -isoacetoxime** and the hydrolysis and reduction of the *iso*-compound (DUNSTAN and GOULDING), T., 630; P., 1901, 84.
- Methylacetylacetone**, action of, on diazo-chlorides (FAVREL), A., i, 167.  
alcohol from (ZELINSKY and ZELIKOFF), A., i, 657.
- Methylacetylaminobenzoic acid**, *o*-cyano-, methyl ester, conversion of, into indigo (ERDMANN), A., i, 536.
- Methylacetylcarbinol** (VAN REYMENANT), A., i, 126.
- Methylacetylmalononitrile** (VAN REYMENANT), A., i, 127.
- $\alpha$ -Methylacryl-benzylanilide**, and -diphenylamide (BISCHOFF), A., i, 527.
- $\alpha$ -Methylacrylic acid**, ethyl ester, action of ethyl oxalate on (LAPWORTH), T., 1282.
- $\alpha$ -Methylacryl-methyl- and -ethyl-anilides** (BISCHOFF), A., i, 526.
- $\alpha$ -Methyladipic acid**, preparation and dissociation constants of (MELLOR), T., 130; P., 1900, 215.
- $\beta$ -Methyladipic acid**, semialdehyde of (HARRIES and SCHAUWECKER), A., i, 448.
- Methyladipic acids** and their anilides (BOUVEAULT and TETRY), A., i, 364.
- 4-Methylasculetin** (v. PECHMANN and v. KRAFFT), A., i, 286.
- Methylal**, formation and decomposition of (DELÉPINE), A., i, 254, 314.
- $\alpha$ s-Methylallylethylene**. See Hexinene.
- Methylamines** and ammonia, estimation and separation of (QUANTIN), A., ii, 361.
- m-Methylaminobenzenesulphonic acid** and its isomeride, and their salts (GNEHM and SCHEUTZ), A., i, 519.
- o*-Methylaminobenzoic acid**, ethyl ester (VORLANDER), A., i, 463.  
cyano-, and its salts, esters, acetyl and nitro- and bromo-derivatives (KÖHNER), A., i, 537.
- Methyldiaminocresol**, and its diacetyl derivative (PINNOW), A., i, 138.
- Methyl- $\alpha$ -aminoethylcarbinol** (HENRY), A., i, 68.
- Methylaminocycloheptadiene** and its salts, benzoyl and phenylthiocarbamide derivatives (WILLSTATTER), A., i, 650.
- m-Methylaminophenol** (GNEHM and SCHEUTZ), A., i, 520.

- 4-Methylaminophenyl- $\mu$ -cyanoazomethine-phenyl, 4'-nitrophenyl and -carboxylic acid**, ethyl ester (SACHS and BRX), A., i, 229.
- p*-Methylaminophenylglyoxylic acid** and its phenylhydrazine (BOEHRINGER & SONS), A., i, 713, 714.
- Methylaminophenylthiodiazole** and its hydrochloride and platinichloride, and acetyl derivative (YOUNG and EYRE), T., 56; P., 1900, 188.
- Methyl-2:3:4-triaminotoluene**, its diacetyl derivative and hydrochloride (PINNOW), A., i, 139.
- Methyl-2:4:5-triaminotoluene** and its triacetyl derivative (PINNOW), A., i, 138.
- Methylanhalonidine** and its salts (HEFFTER), A., i, 737.
- Methylanhydracetonebenzils**,  $\alpha$ - and  $\beta$ -, and  $\alpha$ -Methylanhydracetonedibenzil and its potassium salt (JAPP and MELDRUM), T., 1028; P., 1901, 175.
- Methylaniline**, action of acetylchloro-amino-2:4-dichlorobenzene on (CHATTAWAY and ORTON), T., 465; P., 1901, 39.
- chloroacetyl-, phenylsulphonacetyl, *p*-tolylsulphonacetyl, thiodiglycolyl, sulphonodiacetyl, cyanoacetyl, and thiocyanoacetyl derivatives of (GROTHE), A., i, 79, 80.
- Methylaniline**, *o*-chloro- (CHATTAWAY and ORTON), T., 465; P., 1901, 39.
- 3-chloro-6-nitro- (KEHRMANN and MÜLLER), A., i, 419.
- m*-nitro-, electrolytic reduction of (ROHDE), A., i, 136.
- Methylantranilic acid**,  $\omega$ -cyano-(phenylglycine-*o*-carboxylic acid, nitrile of) (FARBWERK MÜHLHEIM VORM. A. LEONHARDT & Co.), A., i, 709, 710.
- $\beta$ -Methylantranol** and its decomposition products (LIMPRICHT), A., i, 145.
- 4-Methyl-5:6-aziminopyrimidine** (GABRIEL and COLMAN), A., i, 428.
- 1-Methylaziminotoluene**, amino- and 7-nitro-, and 1-Methylaziminochlorotoluidine (PINNOW), A., i, 485.
- Methylbenzaconine**, physiological action of, in relation to its constitution (CASH and DUNSTAN), A., ii, 612.
- Methylbenzo- $\beta$ -ketopentamethylene-azinecarboxylic acid** and its ethyl ester, and their benzylidene derivatives (THOMAS-MAMERT and STRIEBEL), A., i, 615.
- p*-Methylbenzoylbenzene-*o*-sulphonic acid** and its salts (KRANNICH), A., i, 153.
- p*-Methyl-*o*-benzylbenzoic acid**, and its salts, methyl ester, chloride, and amino- and trinitro-derivatives and their salts (LIMPRICHT), A., i, 145.
- p*-Methylbenzylidene-acetoacetic and -bisacetoacetic acids**, ethyl esters (FLÜRSCHHEIM), A., i, 387.
- Methylbenzylideneaminophenylguanidine**. See Acetophenoneaminophenylguanidine.
- Methylborneol** (ZELINSKY), A., i, 661.
- $\gamma$ -Methylbutane**. See Pentane.
- Methylcyclobutane**,  $\omega$ -amino-, action of nitrous acid on (DEMJANOFF and LUSCHNIKOFF), A., i, 509.
- Methylbutane- $\alpha\beta\gamma\gamma$ -tetracarboxylic acids**, ethyl esters,  $\alpha$ - and  $\beta$ - (MICHAEL), A., i, 124.
- $\beta$ -Methylbutane- $\alpha\gamma\gamma$ -tricarboxylic acid**, ethyl ester (MICHAEL), A., i, 124.
- Methylbutane- $\alpha\beta\gamma$ -tricarboxylic acids**,  $\alpha$ - and  $\beta$ - (MICHAEL), A., i, 124.
- $\beta$ -Methyl- $\beta$ -butenoic acid** ( *$\beta$ -methyl-vinylacetic acid*),  $\gamma$ -cyano- (GUARESCHI and PEANO), A., i, 631.
- Methyl isobutenyl ketone**. See Mesityl oxide.
- $\beta$ -Methyl- $\alpha$ -isobutyladipic acid** (DIECKMANN), A., i, 541.
- Methyltert.butylallylcarbinol**, trihydroxy-compound, action of sulphuric acid on (PETCHNIKOFF), A., i, 183.
- Methylbutylallylcarbinols**, *n*- and *sec*-, and their acetyl derivatives and trihydric alcohols (TALIEFF), A., i, 250.
- $\beta\beta$ -Methyl- $\beta$ -butylene**. See Amylene.
- $\beta\beta$ -Methylbutylglutaric acid** (*octanedicarboxylic acid*) and its salts (GUARESCHI), A., i, 630.
- Methylbutylhydracrylic acids**, and their salts (TALIEFF), A., i, 251.
- 4-Methyl-2-isobutylcyclopentanone** and its oxime and semicarbazone (DIECKMANN), A., i, 541.
- $\alpha$ -Methylbutyric acid**. See Valeric acid.
- Methylbutyrylacetic acid**, methyl ester (BONGERT), A., i, 654.
- 2-Methylcamphenepyrroles**,  $\alpha$ -,  $\beta$ -, and  $\gamma$ -, and the 3-carboxylic acids of the  $\alpha$ - and  $\beta$ -compounds (DUDEN and HEYNSIUS), A., i, 747.
- Methylcamphenepyrroline** and its picrate and platinichloride (DUDEN and HEYNSIUS), A., i, 748.
- Methylcamphoroxalic acid** and its ethyl ester (TINGLE), A., i, 633.
- Methylcarbanilic acid**, methyl ester (WHEELER and DUSTIN), A., i, 24.
- Methylcarbimide** (*methyl isocyanate*), absorption spectra of (HARTLEY, DOBBIE, and LAUDER), T., 856; P., 1901, 125.



- Methylchloroindazole** (FISCHER and SEUFFERT), A., i, 411.
- 10-Methylchlorophenylnaphthaphenazonium salts** (FISCHER and BRUNN), A., i, 416.
- $\alpha$ -Methylcinnamic acid**, methyl ester, and the reduction of its fatty esters (COHEN and WHITELEY), T., 1311.
- 4-Methylcoumarin** (v. PECHMANN and v. KRAFFT), A., i, 285.
- Methylcoumaranones**, 4-, 5-, and 6-, synthesis of, and their oximes and semicarbazones (STOERMER and BARTSCH), A., i, 94.
- Methylcoumarophenazine** (MARCHELEWSKI and SOSNOWSKI), A., i, 415.
- Methylcrotonic acids**, isomeric. See Pentenoic acids.
- Methylcyananiline** (*phenylmethylcyanamide*) (SCHOLL and NORR), A., i, 376.
- 4-Methyldaphnetin**, 3-chloro-, and dimethyl ether and diacetyl and dibenzoyl derivatives (v. PECHMANN and HANKE), A., i, 210.
- 4-Methyldeoxyxanthine** and its salts (TAFEL and WEINSCHENK), A., i, 106.
- Methyldiisomylearbinol** (*dodecyl alcohol*) and its acetate (GRIGNARD), A., i, 250, 680.
- Methyldibenzoylmethane** (ABELL), T., 931; P., 1901, 128.
- 4-Methyl-1:4-diethyl-, -4-isopropyl-, and -4-butyl-trimethylenedicarbonimide**, 3:5-dicyano- (GUARESCHI), A., i, 343.
- 2-Methyldihydroisoindole** and its platinum chloride (FRANKEL), A., i, 45.
- Methyldihydrouracils**, 4- and 5-, and bromo-, synthesis of (FISCHER and ROEDER), A., i, 295.
- Methyl  $\gamma$ -dihydroxybutyl ketone** and its phenylcarbamate (TRAUBE and LEHMANN), A., i, 502.
- Methyldihydroxydiethylamine**, picrolonate of (MATTHES), A., i, 260.
- Methyldimethylolacetic acid** (*dihydroxypropionic acid*) (KOCH and ZERNER), A., i, 633.
- 2-Methyl-3-n-diphenyl-1:2-oxypyrrro-1:4-diazole**. See 4:5-Oxy-1:3-diphenyl-4-methylsotriazole.
- Methyldiphenylcyclopentenone** and its phenylhydrazones and **1-Methyl-2:3-diphenylcyclopentane** (JAPP and MELDRUM), T., 1032; P., 1901, 175.
- Methylene**, chemistry of (THOMAS), A., i, 357.
- dibenzozate (DESCUDÉ), A., i, 504, 644.
- iodide, cryoscopic experiments with (GARELLI and BASSANI), A., ii, 541.
- Methylene-*o*-aminobenzoic acid**, methyl ester (ERDMANN), A., i, 536, 591.
- Methylenedi-*o*-aminodibenzoic acid**, methyl esters (MEHNER), A., i, 470; (ERDMANN), A., i, 591.
- Methylenedibenzobenzene** (RASSOW; RASSOW and LUMMERZHEIM), A., i, 777.
- Methylenedibistetronic acid** and its salts (WOLFF and SCHIMPF), A., i, 284.
- Methylenediuret** and its mercurides (SCHIFF), A., i, 457.
- Methylene-chlorohydrin**, action of, on aniline and *o*-toluidine (GRASSI-CRISTALDI and SCHIAVO-LENI), A., i, 55.
- Methylene derivatives**, condensation of, with aromatic nitroso-compounds (SACHS and BRY), A., i, 229.
- Methylenedicytisine** (FREUND and FRIEDMANN), A., i, 289.
- mp*-Methylenedioxybenzylideneindanone** (FEUERSTEIN), A., i, 279.
- Methylenedioxybromostyrene** (FEUERSTEIN and HEIMANN), A., i, 465.
- 3:4'-Methylenedioxy-5-ethyl-2-stilbazole** and its salts (BACH), A., i, 610.
- $\alpha$ -Methyleneglutaric acid** and its hydrobromide (v. PECHMANN and ROHM), A., i, 253.
- Methylenemalonamide** and its mercurides (SCHIFF), A., i, 457.
- Methylenementhone**, amino- (FARBWERKE VORM. MEISER, LUCIUS, and BRUNING), A., i, 692.
- Methylenetetramethylene** bromide (DEMJANOFF and LUSCHNIKOFF), A., i, 509.
- Methylethylacetoxime**, latent heat of vaporisation and specific heat of (LUGININ), A., ii, 145.
- $\alpha$ -Methyl- $\beta$ -ethylacetaldehyde**, action of hydrazine hydrate on (DEMME), A., i, 255.
- Methylethylamine**, formation of (DUNSTAN and GOULDING), T., 639.
- Methylethylfulvene**. See *3*-Butylidenecyclopentene.
- $\beta$ -Methyl- $\beta$ -ethylglutaric acid** (*hexanedicarboxylic acid*) and its salts (GUARESCHI), A., i, 630.
- $\beta$ -Methyl- $\alpha$ -ethyl- and - $\gamma$ -bromoethylglutaric acids** (v. PECHMANN), A., i, 64.
- 1-Methyl-4-ethylcyclohexane** (SABATIER and SENDERENS), A., i, 459.
- 1-Methyl-3-ethylcyclohexanol-3** (ZELINSKY), A., i, 661.
- $\alpha$ -Methyl- $\beta$ -ethylhydracrylic acid**, synthesis of (ASTACHOFF and REFORMATSKY), A., i, 447.
- $\beta$ -Methyl- $\alpha$ -ethylideneglutaranilic acid** (v. PECHMANN), A., i, 64.

- $\beta$ -Methyl- $\alpha$ -ethylideneglutaric acid.** See Dierotonic acid.
- 2-Methyl-5-ethyl- $\psi$ -indophenazine** and its salts (MARCHLEWSKI and RADCLIFFE), A., i, 416.
- 3-Methyl-2-ethyl-, -2-*n*- and -*iso*-propyl-, -2-*isobutyl*-, and -2-*isoamyl*-4-ketodihydroquinazolines** and their salts (GOTTFELF), A., i, 764.
- Methyl ethyl ketone** (*methylacetone*), and its bromo- and chloro-derivatives (VAN REYMENAN), A., i, 126.
- Methylethylketotetramethylenecarboxylic acids**, isomeric, and their carbazones (MICHAEL), A., i, 125.
- Methylethylketotetramethylenetricarboxylic acid**, ethyl ester, and its oxime, phenylhydrazone, and semicarbazone (MICHAEL), A., i, 125.
- 1-Methyl-2-ethylpiperidine** and its salts (LIPP), A., i, 162; (HEIDRICH), A., i, 561.
- 2-Methyl-5-ethylpiperidine.** See Copellidine.
- 2-Methyl-5-ethylpyridine**, action of, on substituted aromatic aldehydes (CASTNER), A., i, 562; (BACH), A., i, 609.
- d*-Methylethylthetine** platinichloride, *d*-camphorsulphonate, and *d*-bromocamphorsulphonate (POPE and PEACHEY), P., 1900, 163.
- Methylfenchyl alcohol** (ZELINSKY), A., i, 661.
- Methylfurfuraldehyde** (*methylfurfural*), preparation of, and its  $\omega$ -bromo- and  $\omega$ -chloro-derivatives (FENTON and GOSTLING), T., 807; P., 1901, 119.
- spectral reactions of (OSHIMA and TOLLENS), A., ii, 484.
- Methylfurfuraldehyde**,  $\omega$ -bromo-, from the action of hydrogen bromide on carbohydrates (FENTON and GOSTLING), T., 361; P., 1901, 22.
- $\alpha$ -Methylglutaric acid** (*butanedicarboxylic acid*), preparation and dissociation constants of (MELLOR), T., 126; P., 1900, 215.
- Methylgranatonine** and its reduction, and its pinacone and its salts (PICCININI and CORTESE), A., i, 740.
- $\beta$ -Methylhepta- $\beta$ -diene.** See Octinene.
- $\beta$ -Methylheptene.** See Octylene.
- $\delta$ -Methyl- $\beta$ -heptene- $\zeta$ -one- $\gamma$ -dicarboxylic acid**, 8-amino-, ethyl ester (RABE and BILLMANN), A., i, 164.
- Methylheptenone**, synthesis of (IPATIEFF), A., i, 256.
- Methyl heptyl ketone** and its semicarbazone (v. SODEN and HENLE), A., i, 396.
- Methylcyclohexadiene.** See Dihydro-toluene.
- Methylhexamethylene**, its nitrile, dibromide, and chloro- (MABERY and SIEPLEIN), A., i, 306.
- Methylcyclohexane** (SABATIER and SENDERENS), A., i, 459.
- 1-Methylcyclohexanol-1** (ZELINSKY), A., i, 661.
- $\beta$ -Methylcyclohexanolacetic acid**, methyl and ethyl esters (WALLACH and SALKIND), A., i, 155.
- Methylcyclohexanol-butyric and -propionic acids**, ethyl esters (v. BRAUN), A., i, 157.
- $\beta$ -Methylcyclohexanone**, oxidation of (BOUVEAULT and TETRY), A., i, 364.
- 1-Methyl-2-cyclohexanonecarboxylic acid**, and its ethyl ester and phenylhydrazone (DIECKMANN), A., i, 542.
- $\beta$ -Methylcyclohexeneacetic acid** and its esters and amide (WALLACH and SALKIND), A., i, 156.
- Methylhexene- $\beta$ - and - $\epsilon$ -ols** and their acetates (GRIGNARD), A., i, 679.
- $\beta$ -Methyl- $\gamma$ - $\delta$ -hexenoic acid.** See Heptenoic acid.
- $\beta$ -Methylhexoic acid.** See Heptoic acid.
- $\alpha$ -Methyl- $\delta$ -hexolactone** (MOHR), A., i, 364.
- $\beta$ -Methylhexolactone- $\gamma$ -carboxylic acid**,  $\delta$ -bromo-, and  $\beta$ -Methylhexolactone (v. PECHMANN), A., i, 64.
- Methylhexylcarbinol.** See *sec*. Octyl alcohol.
- Methylhexylenediamine** and its phosphate and sulphate (HARRIES), A., i, 194.
- $\beta$ -Methylhydrindene**,  $\alpha$ -amino- and its hydrochlorides and their platinichlorides and benzoyl derivatives (KIPPING and CLARKE), P., 1901, 181.
- $\beta$ -Methylhydrindone** and its oxime (KIPPING and CLARKE), P., 1901, 181.
- Methylhydroxyethylamine**, picronolate of (MATTHES), A., i, 259.
- 2-Methylindole**, 3-nitro- (ANGELI and ANGELICO), A., i, 46.
- 1-Methyl-2-iodoethylpiperidine** hydriodide (HEIDRICH), A., i, 561.
- Methylisoprene.** See Hexinene.
- 2-Methyl-4-ketodihydroquinazoline** (GOTTFELF), A., i, 764.
- Methylketotetramethylene-carboxylic acid** and its semicarbazone, and -tricarboxylic acid, ethyl ester (MICHAEL), A., i, 125.
- $\alpha$ -Methyl $\alpha$ -vulolactone** (BÉHAL), A., i, 279.

- Methylmalonic acid** (*isosuccinic acid*; *ethanedicarboxylic acid*), ethyl ester, action of ethyl citraconate, crotonate and fumarate on (MICHAEL), A., i, 124.  
sodium derivative, action of, on mesityl oxide (CROSSLEY), T., 139; P., 1900, 90.
- Methylmalonic acid**, cyano-, ethyl ester (HALLER and BLANC), A., i, 261.
- $\beta$ -Methylmaltoside** (FISCHER and ARMSTRONG), A., i, 671.
- Methylmercaptotetrazole** and its salts (FREUND and PARADIES), A., i, 1770.
- Methylmezcaline** and its methiodide (HEFFTER), A., i, 737.
- Methylmorpholine**, preparation of (MARCKWALD and CHAIN), A., i, 742.
- 7-Methylnaphthaphenazonium** and its salts, 9-chloro-5-amino- (KEHRMANN and MÜLLER), A., i, 419.
- Methyl- $\alpha\beta$ -naphthazine** (WOHL and AUE), A., i, 163.
- Methylnaphthiminazole**, Gallinek's (MELDOLA and STREATFIELD), P., 1900, 183.
- Methyl- $\alpha$ -naphthiminazoles**,  $\alpha$ - and  $\beta$ -, and their salts (FISCHER, FEZER, and REINDL), A., i, 413.
- Methyl nonyl ketone**, reaction of, with benzaldehyde in alcoholic potassium hydroxide (CARETTE), A., i, 13, 127.  
condensation of, with cinnamaldehyde (CARETTE), A., i, 367.
- 3-Methyloctanone-7-al** and its acetal (HARRIES and SCHAUWECKER), A., i, 730.
- 3-Methylisooxazole-5-carboxylic acid** (WOLFF and HEROLD), A., i, 504.
- Methylpentadienes**. See Hexinenes.
- $\beta$ -Methylpentane**. See Hexane.
- Methylpentane- $\alpha\beta\gamma\gamma$ -tetracarboxylic acids**, ethyl esters,  $\alpha$ - and  $\beta$ - (MICHAEL), A., i, 123.
- Methylcyclopentanolacetic acid**, methyl and ethyl esters (WALLACH and SPERANSKI), A., i, 156.
- Methyl-2-cyclopentanolcarboxylic acids**, 1- and 3-, and their salts and ethyl esters (DIECKMANN), A., i, 540.
- Methyl-2-cyclopentanonecarboxylic acids**, 3- and 4-, and their copper derivatives and hydrolysis (DIECKMANN), A., i, 540.
- 3-Methyl- $\Delta^1$ -cyclopentenecarboxylic acid** (DIECKMANN), A., i, 541.
- 3-Methyl- $\psi$ -phenanthroline** (3-methyl-4:7-quinuquinoline) and its 2-carboxylic acid and their salts (WILLGERODT and JABLONSKI), A., i, 51.
- 9-Methylphenanthroline-7-carboxylic acid** (9-methyl-4:10-quinuquinoline-7-carboxylic acid) (WILLGERODT and V. NEANDER), A., i, 51.
- Methylphloroglucinol methyl ethers** and their bromo-derivatives (HERZIG and THEUER), A., i, 205.
- $\alpha$ -Methylpimelic acid** (*hexanedicarboxylic acid*), dissociation constants of (MELLOR), T., 131; P., 1900, 215.
- 1-Methyl-2-pipecoline** and its salts (SCHOLTZ), A., i, 749.
- 1-Methyl-2-pipecolylalkine iodide hydriodide**. See 1-Methyl-2-iodoethyl-piperidine hydriodide.
- 1-Methylpiperidine**, compound of, with  $\alpha$ -chlorohydrin, and base from (BIENENTHAL), A., i, 129.
- 12-Methylprasindone**, 10-chloro-, and its chloride (KEHRMANN and MÜLLER), A., i, 420.
- $\beta$ -Methylpropane- $\alpha\beta\gamma\gamma$ -tetracarboxylic acid**, ethyl ester (MICHAEL), A., i, 124.
- Methylisopropylallylcarbinol** and its trihydroxy and acetyl derivatives (WAGNER), A., i, 183.
- Methylisopropylamine** and its salts (DUNSTAN and GOULDING), T., 640.
- o*-Methylisopropylbenzene** (*o-isopropyltoluene*) and its sulphonic acids and their salts and amides (SPRINKMEYER), A., i, 519.
- 8-Methyl-5-propyl-1:4-benzopyrone** (RUHEMANN), T., 921; P., 1901, 155.
- 1-Methyl-4-isopropylcyclohexane** (SABATIER and SENDERENS), A., i, 459.
- 5-Methyl-8-propyl- and 8-Methyl-5-propyl-1:4-benzopyrone-2-carboxylic acids** (RUHEMANN), T., 920; P., 1901, 155.
- Methyl-*n*-propylcarbinyl chlorocarbonate and carbonate** (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 662.
- $\beta\beta$ -Methylpropylglutaric acid** (*heptanedicarboxylic acid*), and its zinc salt (GUARESCHI), A., i, 630.
- 1-Methyl-3-*n*- and -*iso*-propylcyclohexanols-1** (ZELINSKY), A., i, 661.
- 3-Methyl-1-isopropylcyclopentanone and 4-Methyl-1-isopropyl-2-cyclopentanone-carboxylic acid**, ethyl ester (DIECKMANN), A., i, 541.
- 2-Methyl-5-isopropylphenylacetic acid**, and its dinitro-derivative, and ethyl ester (WALLACH and SPERANSKI), A., i, 156.
- 2 (or 5)-Methyl-5 (or 2)-isopropylphenylacetylene and -chloroacetylene** (KUNCKELL and KORITZKY), A., i, 75.
- 3-Methyl-5-propylpyrazole-4-carboxylic acid** and its methyl ester (BONGERT), A., i, 409.

- 5-Methyl-3-propylpyrazole-4-carboxylic acid**, methyl ester (BONGERT), A., i, 653.
- 4-Methyl-3-propyl-5-pyrazolone** (BONGERT), A., i, 654.
- 2 (or 5)-Methyl-5 (or 2)-isopropylstyrene,  $\alpha\beta$ -dichloro-** (KUNCKEL and KORITZKY), A., i, 75.
- Methylisopropyl-tetra- and -hexa-hydrobenzylaniline and -tetrahydrobenzyl-dimethylamine** (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 691.
- 7-Methylpurine** and its salts, and 5-amino- and 2-thio-derivatives (GABRIEL and COLMAN), A., i, 428.
- 4-Methyl-purone and -isopurone** (TAFEL), A., i, 238.
- 4-Methylpyrazole** and its 5-carboxylic acid, and its esters (v. PECHMANN and BURKARD), A., i, 167.
- 5-Methyl-pyrazole- and -pyrazoline-4:5-dicarboxylic acids** (v. PECHMANN and BURKARD), A., i, 168.
- 4-Methylpyrazoline-5-carboxylic acid**, methyl ester (v. PECHMANN and BURKARD), A., i, 167.
- 3-Methyl-5-pyrazolone** (BONGERT), A., i, 410.
- 3-Methylpyridine**, compound of, with chloroanil (IMBERT), A., i, 651.
- Methylpyridines**. See also Picolines.
- 1-Methylpyridone**, thio- (GUTBIER), A., i, 96.
- 2-Methyl-4-pyridylquinoline** (TSCHERNE), A., i, 749.
- 4-Methylpyrimidine**, its amino-, bromo-, chloro-, and nitro-derivatives and their salts (GABRIEL and COLMAN), A., i, 427.
- 5-Methylpyrimidine (?) and its carboxylic acid** (SCHLENKER), A., i, 763.
- Methylquinine**, *isonitroso*-, and its salts (v. MILLER and ROHDE), A., i, 96.
- Methylquinoline**, 5-nitro- (DECKER), A., i, 655.
- 1-Methylquinoline**, *diiodo*- and its salts and *diiodonitro*- (EDINGER and SCHUMACHER), A., i, 47.
- 2-Methylquinoline** (*quinaldine*), action of phthalic chloride on (EIBNER and LANGE), A., i, 348.
- 1-Methylquinolinesulphononic acid** and its barium salt (EDINGER and SCHUMACHER), A., i, 47.
- 1-Methylquinolone**, thio- (GUTBIER), A., i, 96.
- 1-Methyl-2-quinolone**, nitro-derivatives of (DECKER), A., i, 654.
- p*-**Methyl- $\alpha$ - and - $\beta$ -quinophthalines** and *p*-**Methylquinophthalone** and its bromo- and nitro-derivatives, and anil (EIBNER and SIMON), A., i, 611.
- 6-Methylquinoxaline-2:3-diacetic acid**, ethyl ester (THOMAS-MAMERT and STRIEBEL), A., i, 615.
- 7-Methylrosindone**, 9-chloro- (KEHRMANN and MÜLLER), A., i, 420.
- 10-Methylrosindone**, 9-chloro- (FISCHER and BRÜHN), A., i, 417.
- Methylrosindone** and its salts (FISCHER and CAMMERLOHER), A., i, 417.
- 10-Methylrosindone** and its salts (FISCHER and BRÜHN), A., i, 416.
- Methylsemicarbazide**, v. Brüning's, action of benzaldehyde on (YOUNG and OATES), T., 665; P., 1901, 86.
- Methylsemithiocarbazide** hydriodide (FREUND and PARADIES), A., i, 770.
- Methylsuberolacetic acid**, ethyl ester (WALLACH and VAN BEECK-VOLLENHOVEN), A., i, 156.
- Methylsuccinic acid** from pyruvic acid (WOLFF), A., i, 499.
- menthyl ester (COHEN and WHITELEY), T., 1310; P., 1900, 213.
- Methylsulphonetetrazole** (FREUND and PARADIES), A., i, 770.
- $\beta$ -Methyl- $\gamma\gamma$ ( $\zeta$ )-tetraethylsulphone-heptane** (POSNER), A., i, 15.
- Methyltetrahydroquinoline**. See Kairoline.
- Methyltetrahydroquinoliniumiodo-acetic acid**, methyl ester (WEDEKIND), A., i, 640.
- Methylthioncarbanilic acid**, methyl and ethyl esters, and their conversion to the thiol derivatives (WHEELER and DUSTIN), A., i, 24.
- Methylthio- $\psi$ -uric and 3-Methylthiouric acids** (BOEHRINGER & SONS), A., i, 770.
- Methyl-*p*-toluidine**,  $\beta$ - and  $\gamma$ -*dinitro*-, and their acyl derivatives (PINNOW), A., i, 138.
- Methyltolylenediamine**, nitro- (m. p. 127–128°) (PINNOW), A., i, 139.
- Methyltolylene-2:4-diamine** and 5-nitro-, and their acetyl derivatives (PINNOW), A., i, 138.
- Methyltolylene-4:5-diamine**, 3-nitro- (PINNOW), A., i, 485.
- Methyltricarbimide** (*methyl isocyanurate*), absorption spectra of (HARTLEY, DOBBIE, and LAUDER), T., 859; P., 1901, 125.
- Methyltrimethylenecarbamide** (TAFEL and WEINSCHENK), A., i, 71.
- 3:4-Methylcyclotrimethylenecarbostyryl** (DIECKMANN), A., i, 541.
- Methyl- $\alpha\beta$ -cyclotrimethylene-daphnetin** and -umbelliferone (DIECKMANN), A., i, 541.
- N*-**Methyltriphenoxazine-phenazonium** nitrate and -carbazole and its salts (DIEFOLDER), A., i, 618.

**$\Delta^2$ -Methyltropan** and dibromide, and their aurichlorides and the platinum-chloride of the dibromide (WILLSTATTER), A., i, 223, 649.

**$\Delta^3$ -Methyltropan** hydrochloride, aurichloride and platinumchlorides, and dibromide (WILLSTATTER), A., i, 650.

**$\Delta^4$ -Methyltropan** and its salts (WILLSTATTER), A., i, 225, 650.

**4-Methylumbelliferone**, its 8-diazoanhydride, 8-diazosulphonic acid, and 8-amino- and 8-nitro-, and their acetyl derivatives and methyl ethers (V. PECHMANN and OBERMILLER), A., i, 336.  
methyl ether, 6-amino- and 6-nitro- (V. PECHMANN and OBERMILLER), A., i, 337.

**4-Methylumbelliferone**, 3-chloro-, and its acetyl and benzoyl derivatives (V. PECHMANN and HANKE), A., i, 210.

**Methyluracil**, electrolytic reduction of (TAFEL and WEINSCHENK), A., i, 71.

**5-Methyluracil**. See Thymine.

**Methyluric acids**, reduction of, electrolytically (TAFEL), A., i, 237.

**$\gamma$ -Methylvaleric acid**. See *isohexoic acid*.

**Methylvanillin**, chloro- and iodo- (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 727.

**1-Methyl-2-vinylpiperidine** and its salts and reduction products (HEIDRICH), A., i, 561.

**3-Methylxanthine** (BOEHRINGER & SONS), A., i, 770.

**6-Methylxanthine** and its methylation (KRUGER), A., i, 170.

**Mezcaline**, its constitution, benzoyl and dibromo-derivatives and salts (HEFFTER), A., i, 737.

**Mica** from Ceylon (COOMÁRA-SWÁMY), A., ii, 171.

**Micelles**, albuminous, physical properties of (POSTERNAK), A., ii, 231, 544, 648.

**Microcline**, white, from the Ilmen Mountains (SIOMA), A., ii, 397.

**Microlite** from Finland (NORDENSKIÖLD), A., ii, 515.

**Micro-organisms**, oligonitrophilous (BEYERINCK), A., ii, 523.

**Microperthite** from Wisconsin (WEIDMANN), A., ii, 170.

**Miersite** from Broken Hill, New South Wales (SPENCER), A., ii, 394.

**Migration**, successive, of groups (LAPWORTH), T., 1265; P., 1901, 2, 93.

**Milk**, human, composition of the ash of (CAMERER and SOLDNER), A., ii, 173; (DE LANGE), A., ii, 174.  
ion in (JOLLES and FRIEDJUNG), A., ii, 671.

**Milk:—**

**Colostrum**, human (LAJOUX), A., ii, 671.

**Milk**, acidity of (VIETH and SIEGFELD), A., ii, 46.  
preservation of, for analysis (DUBOIS), A., ii, 429.  
refractive power, amount of volatile fatty acids, and the iodine number of the fat of (HOLM, KRARUP, and PETERSEN), A., ii, 291.  
agreement between the solids of, actually determined and those found by calculation (AMBUHL), A., ii, 137.  
calculations used in the analyses of skimmed and diluted (LOUISE and RIQUIER), A., ii, 429.  
analysis of sour (DUBOIS), A., ii, 429.  
detection of boiled and unboiled (UTZ), A., ii, 428; (GLAGE), A., ii, 429.  
detection of alcohol in (UHL and HENZOLD), A., ii, 425.  
detection of aniline-orange in (LYTHGOE), A., ii, 139.  
test for formaldehyde in (LUEBERT), A., ii, 703.  
detection of formaldehyde and lactose in (RIEGLER), A., ii, 206.  
detection and estimation of preservatives in (BLYTH), A., ii, 483.  
improvement of the diphenylamine test for nitrates in (HEFELMANN), A., ii, 532.  
detection of nitrites in (BETTINK), A., ii, 422.  
estimation of fat in, by means of anhydrous sodium sulphate (LE COMTE), A., ii, 359.  
estimation of formaldehyde in (LIVERSEEGE), A., ii, 483.  
estimation of lactose in (RIEGLER), A., ii, 698.  
estimation of lactose in, by polarisation and reduction (SCHEIBE), A., ii, 204.  
estimation of lactose and sucrose in condensed (S. H. R. and C. N. RIIBER), A., ii, 355.  
estimation of nitrogen in (VIVIAN), A., ii, 363.  
See also Agricultural Chemistry.

**Milk sugar**. See Lactose.

**Millon's reagent**, preparation and use of (NASSE), A., ii, 289.  
action of, on naphthols and phenol (VAUBEL), A., i, 28.

**Mineralogy**, contributions to (CLARKE), A., ii, 63.

**Minerals** containing rare earths, discovery and occurrence of (NORDENSKIÖLD), A., ii, 319.

- Minerals**, preparation of, for analysis, and synthesis of, by double decomposition (MEYERHOFFER), A., ii, 640. colours of (v. KRAATZ-KOSCHLAU and WÖHLER), A., ii, 166; (WEIN-SCHENK), A., ii, 167. Canadian (HOFFMANN), A., ii, 250, 319. from Casal Brunori, near Rome (ZAMBONINI), A., ii, 560. of Ceylon (GRÜNLING), A., ii, 111. from Moravia (KOVÁČ), A., ii, 606. of Roumania (PONI), A., ii, 25. cupriferous, with calcareous gangue, estimation of lead in (GUEROULT), A., ii, 130. rock-forming, from the Tatra Mountains (GORAZDOWSKI), A., ii, 170. simple method for the spectrographic analysis of (HARTLEY and RAMAGE), T., 61; P., 1900, 191.
- Minerals**, new. See also:—  
 Badenite.  
 Bavenite.  
 Brostenite.  
 Ceruleite.  
 Conchite.  
 Coolgardite.  
 Geolyte.  
 Hussakite.  
 Lassallite.  
 Ledouxite.  
 Liveingite.  
 Miersite.  
 Mohawkite.  
 Molybdophyllite.  
 Robellazite.  
 Stibio-domeykite.  
 Stoffertite.  
 Synchysite.  
 Termierite.
- Mineral veins**, enrichment of, by later metallic sulphides (WEED), A., ii, 108.
- Mineral waters**. See under Water.
- Mirabilite** from Kirkby Thore, Westmoreland (TRECHMANN), A., ii, 396. transformation of, into thenardite (SCHEMTSCHUSCHNY and KURNAKOFF), A., ii, 605.
- Mixtures**, binary, vaporisation of (v. ZAWIDZKI), A., ii, 6; (TAYLOR), A., ii, 7; (SCHREINEMAKERS), A., ii, 9, 57; (KOHNSTAMM), A., ii, 145; (CAVBET), A., ii, 147; (DUHEM), A., ii, 372; (KOHNSTAMM and VAN DALFSEN), A., ii, 641. influence of foreign substances on the vapour pressure or boiling point of (SCHREINEMAKERS), A., ii, 445, 641.
- Mixtures**, ternary, vapour pressure of (SCHREINEMAKERS), A., ii, 9, 57, 146, 224, 305, 372, 436, 641.
- Mohawkite** from Michigan (KOENIG), A., ii, 108; (RICHARDS), A., ii, 515.
- Molasses**, analysis of (ANDRĚJ, URBAN, and STANĚK), A., ii, 287. See also Agricultural Chemistry.
- Molasses residues**, acids soluble in ether in (HERZFELD), A., ii, 681.
- Molecular heat**. See Thermochemistry. refraction. See Photochemistry. structure of substances in reference to Maxwell's law  $K=n^2$  (BATSCINSKI), A., ii, 595. weight. See Weight, molecular.
- Molecular-solution-volume** of ethyl tartrate (PATTERSON), T., 214, 482; P., 1900, 177; 1901, 41.
- Molybdate magnesia process**, Wagner's, conversion of, into a purely molybdate one (SEYDA), A., ii, 639.
- Molybdenum**, specific heat of (DEFACQZ and GUICHARD), A., ii, 659. and its oxides, action of steam and of mixtures of steam and hydrogen on (GUICHARD), A., ii, 62.
- Molybdenum alloys**, production of, in the electric furnace (SARGENT), A., ii, 105. with aluminium (GUILLET), A., ii, 512, 602.
- Molybdenum boride** (TUCKER and MOODY), P., 1901, 129. pentachloride, action of water on (GUICHARD), A., ii, 243. iodides, oxides, and sulphides (GUICHARD), A., ii, 62, 243, 659.
- Molybdic acids** (KLASON), A., ii, 162.
- Molybdosulphuric acid**, reduction of, by alcohol (PÉCHARD, A., ii, 243).
- Molybdenum semipentoxide** (KLASON), A., ii, 162; (NORDENSKJÖLD), A., ii, 454. trioxide, separation of, from tungsten trioxide (RUEGENBERG and SMITH), A., ii, 75. oxides. See also Molybdenum blue. oxychloride, Blomstrand's (KLASON), A., ii, 162; (NORDENSKJÖLD), A., ii, 454.
- Molybdenyl chloride**, double salts, with caesium, potassium, and with rubidium chlorides (NORDENSKJÖLD), A., ii, 454. ammonium chloride (KLASON), A., ii, 162. hydroxide (KLASON), A., ii, 162.
- Molybdenum sulphate**, new crystallised (BAILHACHE), A., ii, 243.
- Molybdenum**, estimation of, electrolytically (KOLLOCK and SMITH), A., ii, 694.

- Molybdenum blue**, soluble and insoluble (KLASON), A., ii, 163.  
See also Molybdenum oxides.
- Molybdophyllite** from Wermland, Sweden (FLINK), A., ii, 664.
- Monazite sand**, separation of cerite earths from (MEYER and MARCKWALD), A., ii, 21.
- Monchiquite** from Mount Girnar, India (EVANS), A., ii, 456.
- Monilia sitophila*, a mould from Java (WENT), A., ii, 676.  
influence of nutrition on the secretion of enzymes by (WENT), A., ii, 411.
- Moorland waters** See under Water.
- Morphenol**, preparation of (VONGERICHEN), A., i, 742.  
methyl ether (SCHRYVER and LEES), T., 578; P., 1901, 55.
- Morphide**, chloro-, action of water on (SCHRYVER and LEES), T., 579; P., 1901, 55.
- Morphidine** (VONGERICHEN), A., i, 405.
- Morphine** and *isomorphine*, relationship between (SCHRYVER and LEES), T., 566; P., 1901, 55.  
extraction of, with immiscible solvents (PUCKNER), A., ii, 707.  
detection and estimation of (WIRTHLE), A., ii, 362.  
estimation of, volumetrically (REICHARD), A., ii, 487.  
estimation of, by reduction with silver nitrate (REICHARD), A., ii, 140.  
estimation of, in opium by means of ammoniacal silver chloride (REICHARD), A., ii, 707.
- isoMorphine*, action of hydrobromic acid, of phosphorus tribromide and trichloride, and of sodium ethoxide and methyl iodide on; and its diacetyl derivative (SCHRYVER and LEES), T., 573; P., 1901, 55.
- β-isoMorphine*, preparation and separation of, from *isomorphine*, and its methiodide (SCHRYVER and LEES), T., 569; P., 1901, 54.
- Morpholine** and its derivatives, preparation of (MARCKWALD and CHAIN), A., i, 380, 741.  
preparation of, from ethylene by means of the mercury ethyl ether salt (SAND), A., i, 741.
- Moulds** destroying fats in fodder (KONIG, SPIECKERMANN, and BREMER), A., ii, 676.  
See also *Monilia sitophila* and Yeasts.
- Mucin**, the coagulating properties of (CHARRIN and MOUSSU), A., ii, 404.
- Mucobromic acid**, action of primary amines on, and its esters (SIMONIS), A., i, 268.
- Mucobromic acid**, benzoylhydrazone, semicarbazone, and ethylenediamine of (BISTRZYCKI and HERBST), A., i, 386.
- Mucochloric acid**, action of primary amines on, and its esters (SIMONIS), A., i, 268.
- Mucophenoxybromic acid**, benzoylhydrazone, phenylhydrazone, and semicarbazone of (BISTRZYCKI and HERBST), A., i, 386.
- Mucosalbumin** (KRÜGER), A., i, 621.
- Mucous membranes**, external, impermeability of, to hydrogen sulphide (CHAUVEAU and TISSOT), A., ii, 611.
- Mucus**, action of, on the organism (CHARRIN and MOUSSU), A., ii, 180.
- Mud** from the salt mines of Ischl, Salzburg (WIENER), A., ii, 114.  
of Kanger Lake in Livonia (GLASENAPP), A., ii, 37.  
from the salt lakes of Roumania (BUJOR), A., ii, 114.
- Müllerite** (ZAMBONINI), A., ii, 397.
- Muscle**, glycolytic enzyme in (BRUNTON and RHODES), A., ii, 563.  
does it contain mucin? (FRIED and GIES), A., ii, 255.  
nature of the sugar in (PAVY and SIAU), A., ii, 257.  
frog's, physico-chemical properties of (OKER-BLOM), A., ii, 326.  
rigor in (STEVENS), A., ii, 519.  
action of iodine and iodides on (STOCKMAN and CHARTERIS), A., ii, 255.  
invertebrate, proteids of (V. FURTH), A., ii, 117.  
smooth, effect of carbon dioxide and oxygen on (CLEGHORN and LLOYD), A., ii, 255.  
unstripped, proteids of (VINCENT and LEWIS), A., ii, 255.  
vertebrate, chemistry and heat rigor curves of (VINCENT and LEWIS), A., ii, 460.
- Muscle plasma**, action of serum-globulin on the coagulation of (SPIRO), A., ii, 670.
- Muscovite** from the Tatra Mountains (GORAZDOWSKI), A., ii, 170.
- Muscular energy**, source of (BORNSTEIN; CASPARI; FRENTZEL and REACH; HEINEMANN; ZUNTZ), A., ii, 254; (LICHTENFELT), A., ii, 609.  
irritability, new form of (LOEB), A., ii, 519.  
tissue, composition and heat value of, from different animals (KÖHLER), A., ii, 255.  
differentiation between albumins, albumoses, peptones, and syntonins of (BILTÉRYST), A., ii, 632.

- Mycelia.** See Agricultural Chemistry.  
**Myrcene**, constitution of (BARBIER), A., i, 477.  
 reduction of (SEMMLER), A., i, 732.  
**Myrcenol** and its constitution, acetate, aldehyde, and semicarbazone (BARBIER), A., i, 477, 731.  
**Myristic anhydride.** See Tetradecoic anhydride.  
**Myrosin** (BOKORNY), A., i, 176.  
 "Myriotone" as unit in osmotic measurements (ERRERA), A., ii, 375.

## N.

- Naphtha**, Grosny, composition of (KONOWALOFF and PLOTNIKOFF), A., i, 246.  
 shale, composition of (STEUART), A., i, 109.  
**1:8-Naphthal-bromo- and -chloro-imide** (FRANCESCONI and RECCHI), A., i, 722.  
**Naphthalene**, bromination and iodination of (EDINGER and GOLDBERG), A., i, 23.  
 action of methylene chloride and ethylidene chloride on, in presence of aluminium chloride (BODROUX), A., i, 374.  
**Naphthalene**, 2-chloro-, nitro-derivatives of (SCHEID), A., i, 520.  
 1:5-chloronitro- (CHEMISCHE FABRIK GRIESHEIM-ELEKTRON), A., i, 687.  
 1:5-*di*- and 1:3:8-*tri*-nitro- (KALLE & Co.), A., i, 687.  
 **$\beta$ -Naphthaleneazo-*o*-cresol** and its benzoyl derivative (McPHERSON and GORE), A., i, 572.  
 **$\beta$ -Naphthaleneazodiacetylsuccinic acid**, and its diethyl ester (BÜLOW and SCHLESINGER), A., i, 98.  
 **$\alpha$ -Naphthaleneazophenol** and its benzoyl derivative (McPHERSON and GORE), A., i, 572.  
 **$\alpha$ -Naphthaleneazothymol** and its benzoyl derivative (McPHERSON and GORE), A., i, 572.  
**Naphthalene-1:8-dicarboxylic acid** and anhydride, *hexachloro*- (FRANCESCONI and RECCHI), A., i, 721.  
**Naphthalenesulphonic acids** and chlorides, 1:5- and 1:8-*dinitro*- (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 687.  
**Naphthalenethiolsulphonic acids**,  $\alpha$ - and  $\beta$ -, diazoaryl esters (TRÖGER and EWERS), A., i, 172.  
**Naphthalic acid.** See Naphthalene-1:8-dicarboxylic acid.  
 **$\alpha\beta$ -Naphthaphenazine**, derivatives of (LINDENBAUM), A., i, 423.  
 **$\alpha\beta$ -Naphthaphenazine**, 1:5-*diamino*-, and its diacetyl derivative (KEHRMANN and MISSLIN), A., i, 423.  
 **$\alpha\beta$ -Naphthaphenazine-7:12-oxide** (WOHL and AUE), A., i, 613.  
**Naphthapieric acid**, m. p. 145°, constitution of (KEHRMANN and STEINER), A., i, 101.  
**1:4-Naphthaquinol-3-acetoacetic and -3-malonic acids**, 2-bromo-, ethyl esters (LIEBERMANN and LANSER), A., i, 467.  
 **$\beta$ -Naphthaquinolone-1:3-dicarboxylic acid** and its silver salt (DOEBNER and GLASS), A., i, 630.  
**1:4-Naphthaquinol-2-tetramethyldiaminodiphenylmethane** and its hydrochloride (MÖHLAU and KEGEL), A., i, 56.  
**1:2-Naphthaquinone**, 4:7-*diamino*- (KEHRMANN and STEINER), A., i, 102.  
 4:8-*diamino*-, and its diacetyl derivative (KEHRMANN and MISSLIN), A., i, 423.  
**1:4-Naphthaquinone**, 2:7-*diamino*- (KEHRMANN and STEINER), A., i, 102.  
 2:8-*diamino*-, and its diacetyl derivative (KEHRMANN and MISSLIN), A., i, 423.  
 **$\alpha$ -Naphthaquinone-3-acetoacetic acid**, 2-bromo-, ethyl ester, the fluorescent substance from (LIEBERMANN and LANSER), A., i, 465.  
 2-chloro-, ethyl ester, the fluorescent compound from (BERTHEIM), A., i, 467.  
 **$\alpha$ -Naphthaquinone-3-diketohydrindene**, 2-bromo- (LIEBERMANN and LANSER), A., i, 467.  
**1:4-Naphthaquinoneimine**, 2:8-*diamino*-, and its hydrochloride (KEHRMANN and MISSLIN), A., i, 422.  
 **$\alpha$ -Naphthaquinone-3-*m*- and -*p*-phenylenediamines**, 2-bromo- (LINDENBAUM), A., i, 423.  
 **$\alpha$ -Naphthaquinonetetramethyldiaminodiphenylmethane**, phenylhydrazon of, and its salts and acetyl derivative (MÖHLAU and KEGEL), A., i, 56.  
**1:4:7:10-Naphthatetrazine-2:3:8:9-tetracetic acid**, ethyl ester and its analogues (THOMAS-MAMERT and STRIEBEL), A., i, 615.  
**Naphthenes**, general method for the syntheses of (SABATIER and SENDERENS), A., i, 263.  
 **$\alpha$ -Naphtheurhodole.** See 5-Hydroxy- $\alpha\beta$ -naphthaphenazine.  
 **$\alpha$ -Naphthiminazole**, 1-acetyl and 1-benzoyl derivatives of (FISCHER, FEZER, and REINDL), A., i, 413.



- $\alpha$ -Naphthol**, 4-nitro-, and its methyl and ethyl ethers (CHEMISCHE FABRIK GRIESHEIM-ELEKTRON), A., i, 698.  
*dinitro-derivatives of* (SCHMIDT), A., i, 81.  
 2:4:7-trinitro- (*naphthapicric acid*) (KEHRMANN and STEINER), A., i, 102.  
 2:4:8-trinitro-, derivatives of (KEHRMANN and MISSLIN), A., i, 422.  
 **$\beta$ -Naphthol**, action of, on aldehydes (ROGOFF), A., i, 152; (HEWITT and TURNER), A., i, 207.  
 condensation of, with aldehydes and amines (BETTI), A., i, 81, 611, 753.  
 unstable isomerides of the azo-derivatives of (BETTI and LEONCINI), A., i, 55.  
 and  $\alpha$ -naphthylaminemonosulphonic acids, azo-dyes from (v. GEORGIEVICS), A., i, 239.  
 behaviour of the azo-dyes from, with sheep's wool (v. GEORGIEVICS and SPRINGER), A., i, 239.  
 **$\beta$ -Naphthol**, 1:7-diamino- (CASSELLA & Co.), A., i, 760.  
*dinitro-derivatives of* (SCHMIDT), A., i, 81.  
**Naphthols**, action of aldehydoaminic bases on (BETTI and SPERONI), A., i, 81, 778.  
 action of Millon's reagent on (VAUBEL), A., i, 28.  
 derivatives of, transformation of, into the corresponding amines (BADISCHE ANILIN- and SODA-FABRIK), A., i, 695.  
 **$\beta$ -Naphtholazodiphenylhydrazone-cyanoacetic acid**, ethyl ester (LAX), A., i, 231.  
 **$\beta$ -Naphthol- $\beta$ -o-, -m- and -p-azophenylbenzimidazoles** (MIKLASZEWSKI and v. NIEMENTOWSKI), A., i, 761.  
 **$\alpha$ -Naphthol-4-sulphonic acid**, 2-nitro-, and its salts (WITT and SCHNEIDER), A., i, 699.  
**Naphthol-7-sulphonic acid**, amino- (BADISCHE ANILIN- and SODA-FABRIK), A., i, 696.  
**4-Naphthol-2-tetramethyl-diaminodiphenylmethane**, 1-amino- (MÖHLAU and KEGET), A., i, 56.  
 **$\beta$ -Naphthoxyacetic acid** and its amino- and nitro-derivatives, esters, salts, chloride, amide, and anilide, and the acetyl compound of the amino-derivative (SPITZER), A., i, 715.  
**2-Naphthoxyacetic anhydride**, 1-amino-, and 4-nitro-1-amino-, and their salts (SPITZER), A., i, 715.  
**Naphthoxymethylbenzoxazoles**,  $\alpha$ - and  $\beta$ - (COHN), A., i, 752.  
**2- $\alpha$ - and - $\beta$ -Naphthoxymethyl-5-ethoxybenzimidazoles**, and their salts (COHN), A., i, 353.  
 **$\beta$ -Naphthyl borate** (MICHAELIS and HILLRINGHAUS), A., i, 356.  
**Naphthylallophanic acids**,  $\alpha$ - and  $\beta$ -, ethyl esters (PICKARD and CARTER), T., 845; P., 1901, 123.  
 **$\alpha$ -Naphthylamine**, interaction of, with phenylurethane (DIXON), T., 105; P., 1900, 208.  
 bismuth salts (VANINO and HAUSER), A., i, 290.  
 **$\alpha$ -Naphthylamine**, 4-nitro-, and its alkyl derivatives (CHEMISCHE FABRIK GRIESHEIM-ELEKTRON), A., i, 695.  
 **$\beta$ -Naphthylamine**, *dinitro-derivatives of* (SCHEID), A., i, 521.  
**Naphthylamines**,  $\alpha$ - and  $\beta$ -, acetylation of (SUDBOROUGH), T., 539; P., 1901, 45.  
 additive compounds of, with trinitrobenzene and -toluene and their acetyl derivatives, with ethyl trinitrobenzoate, ethyl and methyl picrates, and with picramide (SUDBOROUGH), T., 525; P., 1901, 44.  
**Naphthylamines**,  $\alpha$ - and  $\beta$ -,  $\beta$ - and  $\alpha$ -nitroso-, action of nitrous acid on (HARDEN and OKELL), P., 1900, 229.  
 **$\alpha$ -Naphthylaminesulphonic acids**, formation of (BADISCHE ANILIN- and SODA-FABRIK), A., i, 695.  
 **$\alpha$ -Naphthylaminemonosulphonic acids** and  $\beta$ -naphthol, azo-dyes from (v. GEORGIEVICS), A., i, 239.  
 behaviour of the azo-dyes from, with sheep's wool (v. GEORGIEVICS and SPRINGER), A., i, 239.  
**Naphthyl-4-aminourazoles**,  $\alpha$ - and  $\beta$ - (BUSCH and GROHMANN), A., i, 616.  
**Naphthylbiurets**,  $\alpha$ - and  $\beta$ - (PICKARD and CARTER), T., 845; P., 1901, 123.  
**Naphthylcarbazinic acids** and chlorides,  $\alpha$ - and  $\beta$ -, ethyl esters (BUSCH and GROHMANN), A., i, 616.  
 **$\alpha$ -Naphthylidimethylcarbinol** (GRIGNARD), A., i, 393, 680.  
 **$\alpha$ -Naphthylid- $\alpha$ -tetrahydronaphthylguanidine** (SCHALL), A., i, 766.  
**Naphthylenediamines** from dihydroxynaphthalenes (BADISCHE ANILIN- and SODA-FABRIK), A., i, 695.  
**Naphthylenedimercuric dichloride** (DIMROTH), A., i, 440.  
 **$\beta$ -Naphthylethylamine**, combination of, with sodium tetrazoditolydisulphonate (SEYEWITZ and BLANC), A., i, 621.  
 **$\alpha$ -Naphthylgalactoside**, preparation of (RYAN and MILLS), T., 705; P. 1901, 90.

- $\alpha$ -Naphthylguanazole** and its hydrochloride (PELLIZZARI and RONCAGLIOLI), A., i, 774.
- $\beta$ -Naphthylisoeptylene**, and  **$\alpha\beta$ - and  $\beta\beta$ -Naphthylpropylenes** and their picrates (GRIGNARD), A., i, 393.
- Naphthylhydroxyoxamides**,  $\alpha$ - and  $\beta$ -, and their acetyl derivatives, reactions of (PICKARD and CARTER), T., 844 ; P., 1901, 123.
- $\alpha$ -Naphthylmercuric salts** (DIMROTH), A., i, 440.
- Naphthyl methyl ketone**, selenium derivative of (KUNCKELL and ZIMMERMANN), A., i, 215.
- Naphthyl methyl ketones**, action of magnesium organic compounds on (GRIGNARD), A., i, 393.
- 1- $\beta$ -Naphthyl-5-methylpyrazole** and its **3:4-dicarboxylic acid** and diethyl ester (BÜLOW and SCHLESINGER), A., i, 99.
- 9- $\beta$ -Naphthyl-10-methylisorosinduline** and its salts (FISCHER and BRUHN), A., i, 417.
- Naphthylolnaphthylloxynaphthylmethane**. See 2:2':2'':Trihydroxy-1:1':1''-trinaphthylmethane, *eso*-anhydride of.
- $\beta$ -Naphthylrosinduline chloride**, 10-chloro- (KEHRMANN and HIBY), A., i, 419.
- 1-Naphthyl-1:3:4-triazoles**,  $\alpha$ - and  $\beta$ -, and their salts (PELLIZZARI and BRUZZO), A., i, 571.
- Naphthylurazoles**,  $\alpha$ - and  $\beta$ - (BUSCH and GROHMANN), A., i, 616.
- Nasturtiums**. See Agricultural Chemistry.
- Nataloin** and its pentacetyl and pentabenzoyl derivatives, **Nataloin-red**, and **Nataloresinotannol** and its *p*-coumarate and tetrabenzoyl derivative (TSCHIRCH and KLAIVENESS), A., i, 399.
- Natron** from British Columbia (HOFFMANN), A., ii, 320.
- Natural waters**. See under Water.
- Nef's views** on the Conrad, Frankland, and Wurtz reactions, criticism of (MICHAEL), A., i, 457.
- Neodymium**, atomic weight of, and its oxides (BRAUNER), P., 1901, 66. spectrum of (BAUR and MARC), A., ii, 634.
- Neodymium chloride** (MATIGNON), A., ii, 602. nitride (MATIGNON), A., ii, 61.
- Neo-erbia**, isolation of (G. and E. URBAIN), A., ii, 160.
- Neon**, isolation of, from air (DEWAR), A., ii, 597. preparation and physical properties of (RAMSAY and TRAVERS), A., ii, 237.
- Neon**, spectrum of (LIVEING and DEWAR), A., ii, 213. refraction of (RAMSAY), A., ii, 141.
- Nepenthes**, digestion in the ascidia of (CLAUTRIAU), A., ii, 183.
- Nephrite**, boulder of, in a street pavement at Breslau (GÜRICH), A., ii, 321.
- Nerium odorum***, constituents of the root of (BOSE), P., 1901, 92.
- Neroli oil** (WALBAUM), A., i, 39, 733 ; (E. and H. ERDMANN), A., i, 601.
- Nerve-cells**, action of nicotine on (PARSONS), A., ii, 408. and nerve-endings, stimulation and paralysis of (LANGLEY), A., ii, 671.
- Nerve degeneration**, chemistry of (HALLIBURTON and MOTT), A., ii, 260 ; (MOTT and HALLIBURTON), A., ii, 463.
- Nerve-muscle** preparations, action of solutions of sodium chloride on (CUSHING), A., ii, 671.
- Nervous tissue**, proximate composition of (BARBIERI), A., ii, 613. physiological action of extracts of (HALLIBURTON), A., ii, 181.
- Neutral-red**, use of, in the bacteriological examination of water (MAGGILL ; SAVAGE), A., ii, 696.
- Nickel**, simultaneous deposition of iron and, from mixed solutions of their sulphates (KÜSTER), A., ii, 555. action of ammonia on, at high temperatures (BEILEY and HENDERSON), T., 1251 ; P., 1901, 190.
- Nickel alloy** with aluminium (BRUNCK), A., ii, 656.
- Nickel arsenate**, octahydrated and anhydrous (DUCRU), A., ii, 23. ammoniacal arsenates (DUCRU), A., ii, 23, 73, 243. bromide and chloride, compounds of, with cupric oxide (MAILHE), A., ii, 601. iodate and its hydrates, solubility of (MEUSSER), A., ii, 555. iodide, double salt of, with mercuric iodide (DOBROSERDOFF), A., ii, 510. nitride (BEILEY and HENDERSON), T., 1252 ; P., 1901, 190. sulphate, temperature coefficient of susceptibility of solutions of (MOSLER), A., ii, 643. ammonium sulphate, electrochemical behaviour of (PFANHAUSER), A., ii, 538.
- Nickel organic compounds**:— ammonia cyanide (BERNOULLI and GRETHER), A., i, 584.
- Nickel**, detection and separation of:— detection of, in presence of cobalt (DONATH), A., ii, 424 ; (DITZ), A., ii, 694.

**Nickel**, detection and separation of:—  
estimation of, in steel (NORRIS), A.,  
ii, 580.

separation of, from cobalt (ROSENHEIM and HULDSCHINSKY), A.,  
ii, 533.

separation of, electrolytically, from  
cobalt (BALACHOWSKY), A., ii, 533.

separation of, from copper (SODERBAUM), A., ii, 197.

separation of, from zinc (TREADWELL and KRAMERS), A., ii, 281.

**Nicotine**, **Nicotelline**, and **Nicotimine**  
and their salts (PICTET and ROTSCHY),  
A., i, 339.

**Nicotine**, action of, on nerve-cells  
(PARSONS), A., ii, 408.

action of, on nerve-cells and nerve  
endings (LANGLEY), A., ii, 671.

estimation of, in cigar smoke (HABERMANN), A., ii, 680.

estimation of, in tobaccos or tobacco  
extracts (TÓTH), A., ii, 363, 708.

**Nicotine oxide**, constitution of (AUERBACH and WOLFFENSTEIN), A., i, 613.

**Nicotinic acid** (*pyridine-3-carboxylic acid*),  $\alpha$ -amino-, methyl ester, and amide  
(KIRPAL), A., i, 227.

*iso***Nicotinic acid** (*pyridine-4-carboxylic acid*), ethyl ester, condensation of,  
with ketones (TSCHERNE), A., i, 749.

**Nicotinic** and *iso***Nicotinic chlorides**  
(MEYER), A., i, 407.

**Niobite**, new treatment of (MOISSAN),  
A., ii, 556.

**Niobium**, fused, preparation and properties of  
(MOISSAN), A., ii, 556.

**Nitration** by means of nitrates in presence  
of water (KONOWALOFF), A.,  
ii, 501.

direct, in the fatty series (BOUVEAULT and WAHL), A., i, 4, 5; (WAHL),  
A., i, 310, 445.

**Nitric acid** and *peroxide*. See under  
Nitrogen.

**Nitrides**, presence of, in crystalline rocks  
(GAUTIER), A., ii, 14, 171, 398.

**Nitrification**. See Agricultural Chemistry.

**Nitriles**, dielectric constants of  
(SCHLUNDT), A., ii, 299.

action of alkyl haloids, alkyl salts of  
the  $\alpha$ -bromo-acids of the acetic series,  
and alkylcarbimides on, in presence  
of magnesium bromide or iodide or  
zinc bromide (BRAISE), A., i, 133.

an additive reaction of (EIBNER and  
SENF), A., i, 166.

*iso***Nitriles** and *cyclo***Nitriles** (SABANÉEFF and PROSIN), A., i, 695.

**Nitriles**. See also:—  
Acetonitrile.

**Nitriles**. See:—

$\alpha$ -Acetylpropionitrile.

Benzonitrile.

Benzyl cyanide.

Brassonitrile.

Butyronitriles.

Camphanonitrile.

Commarilonitrile.

Dihydrolauronolnitrile.

Dimethylacetylacetonitrile.

$\alpha\epsilon$ -Dimethylheptenonitrile.

$\alpha\alpha$ -Dimethylolpropionitrile.

*d*-Diphenyltetramethylenedinitrile.

Elaidonitrile.

Heptenonitrile.

$\alpha$ -Hydroxy- $\beta$ -butenonitrile.

Methylacetylmalononitrile.

Methylanthranilic acid,  $\omega$ -cyano-

Methylhexamethylene, nitrile of.

Phenylacetonitrile.

$\alpha$ -Phenylbromopiperonylcinnamonitrile.

$\alpha$ -Phenylethoxycinnamonitriles.

$\alpha$ -Phenyl-*o*-glucocoumaronitrile.

Phenylglycine-*o*-carboxylic acid, nitrile  
of.

$\alpha$ -Phenylhydroxycinnamonitriles.

$\alpha$ -Phenyl-*p*-methoxycinnamonitrile.

$\alpha$ -Phenyl-*p* methylcinnamonitrile.

Pinocampheleonitrile.

Propionylacetonitrile.

Sorbonitrile.

Succinonitrile.

Tetrahydrothiophentetracarboxylodinitrile.

*o*-Toluidinoacetonitrile.

$\alpha$ -*o*-Toluidinopropionitrile.

*p*-Triazobenzonitrile.

Undecenonitrile.

Urethanophenylacetonitrile.

Valeronitriles.

**Nitrilopentachloro-osmates** (WERNER and DINKLAGE), A., ii, 661.

**Nitrilophenols** (FIQUET), A., i, 469.

**Nitrilosulphates** (DIVERS and HAGA),  
T., 1093; P., 1901, 164.

**Nitroamines**, new class of (FRANCHIMONT and LUBLIN), A., i, 674.

**Nitro-compounds**, aliphatic, preparation  
of (KAUFER and POMERANZ), A., i, 634.

**Nitro-compounds**, aromatic (VAN HETEREN; DE KOCK; DE BRUYN and  
BLANKSMA), A., i, 460.

electrolytic reduction of (ELBS), A.,  
i, 74; (ROHDE), A., i, 135.

electrolytic reduction of, to amines  
(ELBS and SILBERMANN), A., i, 459;  
(CHILESOTTI), A., i, 587; (BOEHRINGER & SONS), A., i, 682.

reduction of, to amines by the aid of  
metals (SABATIER and SENDERENS),  
A., i, 638.

**Nitro-compounds, aromatic**, reduction of, with tin and hydrochloric acid, avoiding the formation of bases containing chlorine in the (PINNOW), A., i, 485.

reduction and action of, in the organism (WALKO), A., ii, 669.

**Nitroferri cyanides**, constitution of (MIOLATI), A., i, 131.

**Nitrogen** in peas (JOHANNSEN), A., ii, 35.

produced by *Bacillus pyocyaneus* (PAKES and JOLLYMAN), T., 322; P., 1900, 189.

occurrence of, in uranium minerals (KOLLSCHÜTTER), A., ii, 598.

band spectrum of (BERNDR), A., ii, 367.

band spectrum of, in oscillatory spark (HEMSALECH), A., ii, 433.

atomic weight of (SCOTT), T., 147; P., 1900, 204.

valency of (POPE and HARVEY), T., 828; P., 1901, 120.

stereochemistry of (SIMON), A., i, 49.

quadrivalent, derivatives of (PILOTY and SCHWERIN), A., i, 517, 583.

quinquevalent, isomeric salts containing (KIPPING and HALL), T., 430; P., 1901, 37.

combustion of (SALVADORI), A., ii, 94.

analogies between carbon, oxygen and, in similar linking (ERLENMEYER), A., i, 61.

influence of caffeine on the excretion of (RIBAUT), A., ii, 565.

variation in the excretion of, during insufficient nutrition (JAVAL), A., ii, 565.

excretion of, after extirpation of the liver (LANG), A., ii, 407.

**Nitrogen bromides and chlorides, substituted** (CHATTAWAY and ORTON), T., 274, 816; P., 1900, 231; 1901, 124; A., i, 227.

from *o*-, *m*-, and *p*-nitroacetanilide (CHATTAWAY, ORTON, and EVANS), A., i, 23.

action of, on amines and phenylhydrazine (CHATTAWAY and ORTON), T., 461; P., 1901, 38.

**Nitrogen chloride**, formation and estimation of (NOYES and LYON), A., ii, 601.

ammonium iodides (RUFF), A., ii, 16.  
*monoxide (nitrous oxide)*, latent heat of evaporation of (CROMPTON), P., 1901, 62.

*dioxide (nitric oxide)*, preparation of; lecture experiment (SENIER), P., 1900, 227.

**Nitrogen peroxide (tetroxide)**, liquid, as a solvent (FRANKLAND and FARMER), T., 1356; P., 1901, 201.

action of, on benzilmonoximes (PONZIO), A., i, 154.

**Nitrogen acids** :—

**Nitric acid**, formation of, during combustions (BERTHELOT), A., ii, 17.  
preparation of solutions of, for analysis (MEADE), A., ii, 530.

physical properties of solutions of (VELEY and MANLEY), A., ii, 447.  
action of, on alcohols (KONOWALOFF), A., i, 249.

analysis of, by Du Pont's nitrometer (PITMAN), A., ii, 192.

toxicological detection of (FLEURY), A., ii, 277.

detection and estimation of, in combination with alkali metals (PERMAN), A., ii, 532.

improvement of the diphenylamine test for, in milk and water (HEFELMANN), A., ii, 532.

rapid estimation of, in soils (MONTANARI), A., ii, 688.

detection and estimation of, in water, with brucine and glacial formic acid (CAZENEUVE and DÉFOURNEL), A., ii, 532.

estimation of, in water (KOSTJAMIN), A., ii, 38; (HENRIET), A., ii, 422; (WINKLER), A., ii, 627.

**Nitrates**, action of Bacteria on (PAKES and JOLLYMAN), T., 322, 459; P., 1900, 189; 1901, 39.

displacement of the nitric acid of, by formic acid (CAZENEUVE), A., ii, 379.

See also Agricultural Chemistry.

**Nitrous acid**, velocity of reaction and polymolecular transformations between, and metallic iodides (SCHÜKAREFF), A., ii, 647.

oxidation of (VORLÄNDER), A., i, 462.  
action of, on wool (LIDOFF), A., i, 243.

reactions of (v. BAEYER and VILGGER), A., i, 309.

detection of, in milk (BETTINK), A., ii, 422.

estimation of, alone or in presence of nitrates (PELLET), A., ii, 73.

estimation of, and separation of, from nitrates (DE KONINCK), A., ii, 73.

estimation of, in waters (WINKLER), A., ii, 627.

**Nitrites**, electrolytic reduction of, and estimation of, in presence of ammonia and hydroxylamine (SULER), A., ii, 637.

**Nitrogen, detection and estimation of:**—  
 estimation of, oxidation of nitrogen as a source of error in the (WHITE), A., ii, 622.  
 detection of, in arsenic (CHRISTOMANOS), A., ii, 59; (FITTICA), A., ii, 59, 236, 313; (ARNOLD and MURACH), A., ii, 236.  
 estimation of, in cheese and milk (VIVIAN), A., ii, 363.  
 estimation of, in a diazoamino-compound (MEHNER), A., i, 473.  
 apparatus for the estimation of, in nitrates by the Schulze-Tiemann method (STANEK), A., ii, 474.  
 error in Fritsch's method for the simultaneous estimation of carbon and, in organic compounds (VAN AKEN), A., ii, 691.  
 estimation of, in saltpetre (BÖTTCHER), A., ii, 124; (v. WISSELL), A., ii, 125.  
 estimation of, in urine for clinical purposes (JOLLES), A., ii, 688.  
 estimation of dissolved, in natural waters (WINKLER), A., ii, 696.  
 of amino-acids, estimation of the, in urine (KRÜGER and SCHMID), A., ii, 290.  
 organic, estimation of, by Kjeldahl and Will and Varrentrap's methods (VAN ENGELEN), A., ii, 343.  
 estimation of the availability of, in fertilisers (STREET), A., ii, 531.  
 proteid, estimation of, in vegetable matter (FRAPS and BIZZELL), A., ii, 140.  
 See also Agricultural Chemistry.  
**Nitro-groups**, orientating influence of the methoxy-group on (KAUFLE and WENZEL), A., i, 590.  
 estimation of, volumetrically (ALTMANN), A., ii, 475.  
**Nitrohydroxylaminic acid** and its salts (ANGELICO and FANARA), A., i, 707; (ANGELI and ANGELICO), A., ii, 381.  
 action of, on piperidine (ANGELI), A., i, 57.  
 salts, reactions of, with aldehyde, amines, and nitroso-derivatives (ANGELI and ANGELICO), A., i, 322.  
**Nitromicrobium**, assimilation of carbon dioxide by (STUTZER), A., ii, 267.  
**Nitrometer**, Du Pont's (PITMAN), A., ii, 192; (LUNGE), A., ii, 278.  
 estimations with the (SHEPARD), A., ii, 474.  
**Nitrosoamines**, oxidation of (VORLÄNDER), A., i, 462.  
**Nitroso-compounds**, aromatic, condensation of, with methylene derivatives (SACHS and BRY), A., i, 229.

*iso***Nitroso-compounds** (HOLLEMAN), A., i, 3.  
**Nitroso-groups**, estimation of, in organic compounds (CLAUSER), A., ii, 422.  
**Nitroxyl**, NOH, reactions of (ANGELI and ANGELICO), A., i, 322.  
**Nodules**. See Agricultural Chemistry.  
**Nonaldehyde** from oil of lemons (BURGESS), P., 1901, 171; (v. SODEN), A., i, 733.  
*n*-**Nonanedicarboxylic acid** (WALKER and LUMSDEN), T., 1194.  
**Non-electrolytes**. See Electrochemistry.  
**Noninene** ( $\beta$ -dimethyl- $\delta$ -heptadiene) and its dihydrobromide (GRIGNARD), A., i, 680.  
**Noninoic acid** (*hexylpropionic acid*) (MOUREU and DELANGE), A., i, 360.  
**Nonoic acid** (*pelargonic acid*) from the action of fused potash on dihydroxystearic acid (LE SUEUR), T., 1314; P., 1900, 91.  
 synthesis of (MOUREU and DELANGE), A., i, 360.  
*n*-**Nonoic anhydride** (KRAFFT and ROSINY), A., i, 113.  
**Nonyl alcohols**. See:—  
 Diisobutylcarbinol.  
 Diethylisobutylcarbinol.  
 Dimethylhexylcarbinol.  
**Nonylenic acid** ( $\alpha$ -dimethylheptenoic acid) and its amide and nitrile (TIEMANN, LEMME, and KERSCHBAUM), A., i, 19.  
 $\Delta^{2,4}$ -**Norcaradiene-7-carboxylic acid** ( $\psi$ -phenylacetic acid) and its salts and derivatives (BRAREN and BUCHNER), A., i, 385.  
**Norcarandicarboxylic acid**, *cis*-1:2-, and its ethyl ester and anhydride (BRAREN and BUCHNER), A., i, 85.  
**Nori** from Japan (OSHIMA and TOLLENS), A., ii, 468.  
*Nostoc punctiforme*, vegetation of, in presence of different carbohydrates (BOUILHAC), A., ii, 571.  
**Nucleic acids** (BANG; KOSSEL), A., i, 299.  
 preparation and analysis of some (LEVENE), A., i, 299, 623.  
**Nuclein**, metabolism of (LOEWI), A., ii, 325.  
 yeast, uracil from (ASCOLI), A., i, 108.  
**Nucleins**, the phosphorus of (ASCOLI), A., i, 108.  
**Nucleohiston** (BANG; KOSSEL), A., i, 57, 299.  
**Nucleo-proteids** in tea leaves (ASÖ), A., ii, 679.  
**Nutrition** in summer and winter in moderate climates (RANKE), A., ii, 29.  
**Nux vomica**, assay of (BIRD), A., ii, 140.

## O.

**Oatmeal**, analyses of some pure (DYER), A., ii, 481.

**Oats**. See Agricultural Chemistry.

**Obesity** in relation to perspiration (SCHATTENFROH), A., ii, 174.

**Obituary notices** :—

Edmund Atkinson, T., 872, 888.

Sir John Conroy, T., 889.

Thomas Flower Ellis, T., 872.

Sir John Bennet Lawes, T., 873, 890.

Stevenson Macadam, T., 897.

Richard Reynolds, T., 873.

Saville Shaw, T., 875.

**Oceanic salt deposits**, formation of (VAN'T HOFF and v. EULER-CHELPIN; VAN'T HOFF and WILSON), A., ii, 249; (VAN'T HOFF and MEYERHOFFER), A., ii, 396; (VAN'T HOFF, HINRICHSSEN, and WEIGERT), A., ii, 506.

crystallisation of (VAN'T HOFF), A., ii, 558.

**Ocellatic acid** and its potassium salt (HESSE), A., i, 596.

**Ocimene** from *Ocimum Basilicum* (VAN ROMBURGH), A., i, 220.

**Octane**,  $\alpha\theta$ -diamino-, synthesis of, from sebacic acid, and its dibenzoyl derivative and salts, and action of nitrous acid on (CURTIUS and STELLER), A., i, 70.

**Octanedicarboxylic acids**. See :—

$\beta\beta$ -Ethylpropylglutaric acid.

$\beta\beta$ -Methylbutylglutaric acid.

**Octinene** ( $\beta$ -methylhepta- $\beta\epsilon$ -diene),  $\zeta$ -chloro- (CHEMISCHE FABRIK; GRIESHEIM-ELEKTRON), A., i, 731.

$\alpha$ -**Octinoic acid** (*amylpropiotic acid*), and its esters, chloride, *p*-aniside,  $\alpha$ -naphthylamide, and toluidides (MOUREU and DELANGE), A., i, 359.

hydrogenation of (MOUREU and DELANGE), A., i, 360.

$\beta$ -**Octinyl alcohol** and its acetyl derivative (MOUREU and DESMOTS), A., i, 443.

**Octobenzoylraffinose** (STOLLE), A., i, 189.

**Octohydrodinaphthylene oxide** (HÖNIG-SCHMID), A., i, 700.

**Octoic acid**, synthesis of (MOUREU and DELANGE), A., i, 360.

*n*-**Octoic anhydride** (KRAFFT and ROSINY), A., i, 113; (AUTENRIETH), A., i, 186.

**Octomethylene-carbamide**, and -dicarb-anilide (CURTIUS and STELLER), A., i, 70.

**Octomethylenediamine**. See Octane,  $\alpha\theta$ -diamino-.

*n*-**Octoylphenylhydrazine** (AUTENRIETH), A., i, 186.

**Octyl alcohol**, action of, on its sodium derivative (GUERRET), A., i, 307.

**Octyl alcohol** (*dimethylamylcarbinol*) (MASSON), A., i, 250.

**Octyl alcohol** (*dimethylisoamylcarbinol*) and its acetate (GRIGNARD), A., i, 680.

see. **Octyl alcohol** (*methylhexylcarbinol*), influence of, as solvent, on the rotation of ethyl tartrate (PATTERSON), T., 480; P., 1901, 40.

**Octylene** ( $\gamma$ -ethyl- $\beta$ -hexene) (MASSON), A., i, 250.

**Octylene** ( $\beta$ -methylheptene),  $\zeta\zeta$ -dichloro- (CHEMISCHE FABRIK GRIESHEIM-ELEKTRON), A., i, 731.

**Ödema-fluid**, composition of (BAYLAC), A., ii, 566.

**Œsophagus**, rhythmic activity of the (STILES), A., ii, 519.

**Ohm's law**, apparatus to illustrate (MILLER and KENRICK), A., ii, 56.

**Oils**, heat of combustion of, in their analysis (SHERMAN and SNELL), A., ii, 430.

phosphorised, estimation of phosphorus in (STICH), A., ii, 422; (FRÄNKEL), A., ii, 423.

vegetable (SCHIMMEL & Co.), A., i, 394.

surface tension and viscosity of some (JEANCARD and SATIE), A., i, 394.

modification of Welmann's reaction for (GEUTHER), A., ii, 48.

estimation of carvone in (WALTHER), A., ii, 49.

estimation of methyl anthranilate in (HESSE and ZEITSCHSEL), A., ii, 209.

mineral. See Naphtha, Petroleum and Shale oil.

comparison between the bromine and iodine absorption figures of (VULTÉ and LOGAN), A., ii, 430.

absolute iodine absorption number of (TORTELLI and RUGGERI), A., ii, 47.

the Maumené test for (MITCHELL), A., ii, 587.

detection of sesamé oil in (TAMBON), A., ii, 360.

estimation of sulphur in (JEAN), A., ii, 687.

elimination and estimation of water in (DAVIS), A., ii, 629.

**Oils**. See also :—

Akee, oil of.

*Alpinia malaccensis*, oil of.

*Andropogon muricatus*, oil of.

Angostura bark, oil from.

**Oils.** See:—

- Barosma betulina* and *B. serratofolia*, oil of.  
 Bay, oil of.  
 Bearsword oil.  
 Bergamot oil.  
 Buchu leaves, oil of.  
 Calamus oil.  
 Camphor oil.  
 Cascarella oil.  
 Cassia flowers, oil of.  
 Castor oil.  
*Catha edulis*, oil from.  
 Cedar nut oil.  
 Ceylon oil (*cocoa butter*).  
 Citron, oil of.  
 Cocoa butter (*cocoanut oil*).  
 Copal, Kauri, oil from.  
 Corn oil.  
 Cotton seed oil.  
 Elder tree bark, oil of.  
 Eucalyptus oil.  
 Fennel oil.  
 Geranium, oil of.  
 Jasmine blossom, oil of.  
 Juniper, oil of.  
 Lemon oil.  
 Linaloes oil.  
 Maize oil.  
 Neroli oil.  
*Oleum cacao*.  
 Olive oil.  
 Orange blossom, oil of.  
 Orange peel, sweet, oil of.  
*Picea vulgaris*, oil from.  
*Pinus Pinaster*, oil from.  
*Pinus sylvestris*, oil from.  
 Roses, oil of.  
 Rose wood, oil of.  
 Rue, oil of.  
 Sandalwood oil.  
 Sesamé oil.  
*Stillingia sebifera* seeds, oil of.  
 Sunflower oil.  
 Thyme, oil of.  
 Vetiver, oil of.  
 Wood oil.  
 Ylang-ylang oil.
- Olefines**, production of (NEF), A., i, 626.  
 from the action of zinc powder on saturated fatty acids (HÉBERT), A., i, 251.  
 action of hypochlorous acid on (KRASUSKY), A., i, 246.  
 See also Hydrocarbons.
- Oleic chloride** and amide (KRAFFT and TRITSCHLER), A., i, 116.
- Oleins**, estimation of unsaponifiable matters in commercial (NEFF), A., ii, 360.
- Oleum cacao* (WELMANS), A., ii, 207.

LXXX. ii.

- Olfactory sensibility**, methods for determining the limits of (BERTHELOT), A., ii, 406.
- Olive oil**, mixed glycerides in (HOLDE and STANGE), A., i, 577.
- Olives**. See Agricultural Chemistry.
- Olivetoric acid** (ZOFF), A., i, 88; (HESSE), A., i, 595.
- Olivetorinic acid** (ZOFF), A., i, 88.
- Olive trees**, the manna of (TRABUT), A., ii, 184; (BATTANDIER), A., ii, 268.
- Ononin** (v. HEMMELMAYR), A., i, 160.
- Onospin** and its hydrolysis (v. HEMMELMAYR), A., i, 160.
- Opalescence**, apparatus for the observation of (TSVEII), A., ii, 298.
- Opals** from Tuscany (D'ACHIARDI), A., ii, 109.
- Opianic acid** benzoylhydrazone and *N*-phenyloxime (BISTRZYCKI and HERBST), A., i, 387.
- Opianylidene-*p*-hydroxyaniline** (BISTRZYCKI and HERBST), A., i, 387.
- Opium**, assay of (STEVENS), A., ii, 631.  
 estimation of morphine in, by means of ammoniacal silver chloride (REICHARD), A., ii, 707.
- Opium alkaloids**, thermochemical researches on the (LEROY), A., ii, 6.
- Optical constants** of chromium (MICHELI), A., ii, 82.
- Optically active compounds**, production of, from inactive substances (COHEN and WHITELEY), T., 1305; P., 1900, 212; (KIPPING), P., 1900, 226.
- Optically inactive base**, resolution of an, by an active alkyl haloid (SCHOLTZ), A., i, 749.
- Orange-II** (SISLEY), A., i, 775.
- Orange blossom**, oil of (HESSE and ZEITSCHER), A., i, 733.
- Orange-peel**, sweet, oil of (STEPHAN), A., i, 160.
- Orange residues** in Calabria, nutritive value of (GABRIELLI), A., ii, 71.
- Orbiculatic acid** (HESSE), A., i, 596.
- Orchil** and "**Orchil red**," detection of, in wine (BELLIER), A., ii, 210.
- Orchitic extracts**, composition and action of (DIXON), A., ii, 259.
- Orcinol**, nitroso-, and its ethers, constitution of (HENRICH), A., i, 464.
- Ores**, reduction of, by calcium carbide and silicon carbide (NEUMANN), A., ii, 98.  
 containing sulphur, estimation of silver in (HOLLARD), A., ii, 578.  
 estimation of sulphur in (PELLET), A., ii, 622.
- Organic compounds**, electro-synthesis of (ELBS and FOERSTER), A., i, 109.

- Organic compounds**, electro-capillary properties of, in aqueous solution (GOUY), A., ii, 83, 435.  
 form of change in (LAPWORTH), T., 1265; P., 1901, 93.  
 melted, change of temperature attending the solidification of (PAWLEWSKI), A., ii, 85.  
 containing nitrogen, oxidation of (VORLÄNDER), A., i, 454.  
 pyrogenic reactions of (IPATIEFF), A., i, 248.  
 estimation of the nitroso-groups in (CLAUSER), A., ii, 422.
- Organic substances**, use of chromyl dichloride for the destruction of, in toxicological analysis (PAGEL), A., ii, 39.  
 method for the destruction of, applicable to the detection of inorganic poisons (DENIGÈS), A., ii, 690.  
 error in Fritsch's method for the simultaneous estimation of carbon and nitrogen in (VAN AKEN), A., ii, 691.  
 oxidisable, estimation of, in water (RUPPIN), A., ii, 201.
- Organism**, relationship between physiological action, constitution and chemical change in the (HILDEBRANDT), A., ii, 614.  
 synthesis in the (HILDEBRANDT), A., ii, 180, 669.  
 formation of allantoin in the, from uric acid (SWAIN), A., ii, 610.  
 localisation and dissemination of anti-mony in the (POUCHET), A., ii, 673.  
 origin of iodine in the (BOURCET), A., ii, 520.  
 origin of kynurenic acid in the (GLAENSNER and LANGSTEIN), A., ii, 669.  
 formation of lactic acid in the (SAITO and KATSUYAMA), A., ii, 405.  
 formation of oxalic acid in the (STRADOMSKY), A., ii, 404; (CIPOLLINA), A., ii, 668.  
 formation of urea in the (V. GULEWITSCH), A., ii, 29.  
 composition of fat in the (HENRIQUES and HANSEN), A., ii, 405.  
 decomposition of atropine and cocaine in the (WIECHOWSKI), A., ii, 615.  
 reduction and action of aromatic nitro-compounds in the (WALKO), A., ii, 669.  
 type of reaction by which sodium carbonate and hydrochloric acid may be formed in the (OSBORNE), A., ii, 402.
- Organometallic compounds**, new reactions of (BLAISE), A., i, 133, 252, 363.  
 action of, on alkyl esters (BÉHAL), A., i, 246; (MASSON), A., i, 249; (GRIGNARD), A., i, 250.
- Organometallic compounds**. See also :—  
 Acetylacetone, platinum compounds.  
 Anisylmercuric iodides.  
 Benzeneazohydroxymethylphenylmercuric salts.  
 Cacodylic acid.  
 o-Carboxyphenylmercuric hydroxide.  
 Cinnamylcacodylic acid.  
 Diethylarsine.  
 Diethylenediaminecobalt salts.  
 p-Dimethylaminophenylmercuric salts.  
 Dipropylene oxide mercuric bromide.  
 Dipropylene oxide mercuric iodide.  
 Ethanolmercuric iodide.  
 Ethyl ether mercuric iodide.  
 Ferrisalicyclic acid.  
 Glyceroarsenic acid.  
 Hydroxymercuribenzoic acid.  
 4-Hydroxy-1-methylphenylmercuric salts.  
 Hydroxyphenylmercuric salts.  
 Indiumacetylacetone.  
 Mercuribenzoic acid.  
 o-Mercuridibenzoic acid.  
 Mercuridiethylene oxide.  
 o-Mercuridiphenol.  
 Mercuriguaiacolsulphonic acid.  
 Mercuriphenoldisulphonic acid.  
 Mercurodiethylene oxide.  
 Naphthylenedimercuric dichloride.  
 α-Naphthylmercuric salts.  
 Osmyloxalic acid.  
 Phenethylmercuric salts.  
 Phenylmercuric salts.  
 Propylene glycol mercuric iodide.  
 Pyridinium pentachlorochromate.  
 o-Sulphomercuribenzoic acid.  
 Tetraethyldiarsonium salts.  
 Tetraethyldiacodylic acid.  
 Urano-oxalic acid.  
 Zinc ethyl.  
 Zinc indigo-white.
- Organs**, transformation and regeneration of (LOEB), A., ii, 177.  
 arsenic in the (HÖDLMOSE), A., ii, 673.  
 ferment acting on salol in (NOBÉCOURT and MERKLIN), A., ii, 324.  
 proteolytic enzymes in (HEDIN and ROWLAND), A., ii, 462.  
 glycogen in (MEILLERE and LÉPER), A., ii, 326.
- Orientating influence** of the methoxy-group in the nitro-group (KAUFLE and WENZEL), A., i, 590.



- Oroxylin**, isolation of, and its triacetyl and dibromo-derivatives, and decomposition products (NAYLOR and DYER), T., 954; P., 1901, 148.
- Orpiment** from Gross-Tresny, Moravia (KOVÁR), A., ii, 606.
- Orsat's apparatus**, improvement in (BEMENT), A., ii, 342.
- Orthoclase** from the Tatra Mountains (GORAZDOWSKI), A., ii, 170.
- Orthoformic acid**. See under Formic acid.
- Orygmænic acid** and its salts from lichens (ZOPF), A., i, 547.
- Osmiamic acid**, constitution of (WERNER and DINKLAGE), A., ii, 661.
- Osmium**, nitroso-compounds, reduction of, and double salts (BRIZARD), A., ii, 108.
- Osmium**, estimation and separation of, in platinum ores (LEIDIE), A., ii, 62; (LEIDIE and QUENNESSEN), A., ii, 695.
- "Osmophoric" groups** (RUPE and v. MAJEWSKI), A., i, 103.
- Osmosis and Osmotic pressure**. See Diffusion.
- Osmyloxalic acid**, salts (WINTREBERT), A., i, 313.
- Osseo-mucoid** (HAWK and GIES), A., i, 298; ii, 520.
- Osyritrin** from *Osyris compressa* (PERKIN), P., 1901, 88.
- Ovalbumin**, characteristics of (GUÉRIN), A., ii, 211.
- Oxalacetic acid**, formation of, from tartaric acid (WOHLAND OESTERLIN), A., i, 365.  
action of ammonia, aniline, hydrazine, hydroxylamine, phenylhydrazine, benzylphenylhydrazine, and urea on, and its oxidation (FENTON and JONES), T., 91; P. 1900, 205.  
phenylhydrazone, hydrazone, and hydrazine salt of the hydrazone (FENTON and JONES), T., 91; P., 1900, 205.
- Oxalacetic acid**, cyano-, ethyl ester, synthesis of (BERTINI), A., i, 776.
- Oxaldiacetic acid**. See Citic acid.
- Oxalic acid**, formation of, in the organism (STRADOMSKY), A., ii, 404; (CIPOLLINA), A., ii, 668.  
estimation of tartaric acid in presence of (PALLADINI), A., ii, 135.
- Oxalic acid**, double salts, and their crystallography (WYROUBOFF), A., i, 7.  
ammonium salt, formation of carbon during the electrolysis of (VERWER), A., ii, 693.  
decomposition of (GILLOT), A., i, 118.
- Oxalic acid**, calcium salt, occlusion of magnesium oxalate by, and solubility of (RICHARDS, McCaffrey, and BISBEE), A., ii, 624.  
detection of, in commercial hydrogen peroxide (ARTH), A., ii, 622.  
chromium salt (WYROUBOFF), A., i, 579.  
titanium salts (ROSENHEIM and SCHÜTTE), A., ii, 245.  
uranium derivative (KOHLSCHUTTER and ROSSI), A., i, 448.
- Oxalic acid**, ethyl ester, action of phenol on (TINGLE and O'BYRNE), A., i, 533.  
condensation of, with *o*- and *p*-nitrotoluenes and with ethyl crotonate and  $\alpha$ -methylacrylate (LAPWORTH), T., 1272; P., 1900, 109, 132.
- Oxalic diethyl ether**, *semi-imino*-, preparation of (LANDER), T., 702; P., 1901, 61.
- $\gamma$ -Oxalocrotonic acid**, and its ethyl ester (LAPWORTH), T., 1276; P., 1900, 132; 1901, 96.
- Oxalyl diethylacetoacetic acid**, ethyl ester (CONRAD), A., i, 66.
- Oxalyl dimethylacetoacetic acid**, and its methyl ester and its salts; its oxime, and bromo- and thiazyl derivatives (CONRAD), A., i, 65.
- Oxanil** and *dithio*- (SABANIEFF and PROSIN), A., i, 695.
- Oxanilic acid**, ethyl ester, and **Oxanilide**, alkylation of (LANDER), T., 699; P., 1901, 59.
- Oxazine derivatives**, synthesis of (BETTI), A., i, 611.  
syntheses of, by means of acetylaminonaphthalic acid (KEHRMANN and BARCHE), A., i, 47.
- Oxazole**,  $C_4H_3O_3N$ , from ethyl  $\beta\beta$ -diacetylpropionate, hydroxylamine hydrochloride, and potassium carbonate (MARCH), A., i, 312.
- 5-isoOxazolone-3-*p*-nitrobenzeneazooacetic acid**, ethyl ester (BÜLOW and HÖFFNER), A., i, 241.
- Oxidation** by gaseous oxygen, mechanism of the reaction of (MANCHOT and HERZOG), A., ii, 549.  
by means of persulphates (NAMIAS), A., ii, 16.
- Autoxidation** (HABER), A., ii, 93.  
and its connection with the theories of ions and of the galvanic cell (HABER), A., ii, 299.
- Oxides**, thermoelectric behaviour of some (VAN AUBEL), A., ii, 222.  
action of zinc ethyl on (GRANICHSTADTEN and WERNER), A., i, 518.

**Oxime**,  $C_5H_{11}O_2N$ , from the action of nitric acid on dimethylethylcarbinol (KONOWALOFF), A., i, 249.

$C_6H_{13}O_3N$ , from the aldol from the condensation of  $\alpha$ -hydroxyisobutaldehyde with acetaldehyde (RÖESLER), A., i, 669.

$C_7H_{13}ON$ , and its acetyl derivative, from heptenoaldehyde (KOHN), A., i, 255.

$C_7H_{15}O_2N$ , from the aldol,  $C_7H_{14}O_2$  (WOGGINZ), A., i, 254; (KOHN), A., i, 255.

$C_8H_{15}O_2N$ , from the aldol,  $C_8H_{14}O_2$  (PLATTENSTEINER), A., i, 255.

$C_{10}H_{13}O_{12}N$ , from the aldol,  $C_{10}H_{12}O_2$  (HACKHOFFER), A., i, 278.

$C_{11}H_{15}O_2N$ , from the aldol from isobutaldehyde and salicylaldehyde (HERZOG and KRUH), A., i, 213.

**Oximes** and their reduction to the corresponding amines (KONOWALOFF), A., i, 281.

model of the nitrogen atom showing the stereoisomerism of the (WEDEKIND), A., ii, 596.

**Oximes**. See also:—

Acetaldoximes.

4-Acetoacetylpyridine, oxime of.

Acetonylpropylidenebistetric acid, oxime of.

Acetophenoneoximes.

Acetoxime.

Acetylaminohydroxyacetophenone-oxime.

Acetylbenzoyl-*p*-bromophenylhydraz-oxime.

Acetylbenzoylhydrazoxime.

Acetylcoumaroneoxime.

Aldoximes.

*o*-Aldoximophenylazo-*o*-aldoximoanilide.

*iso*Anisaldoxime.

Artemisininoxime.

Benzaldoximes.

Benzeneazoacetonedicarboxylic acid, oxime of.

Benzil*mono*-oximes.

$\alpha$ -Benzylidenehydrindoneoxime.

Camphoroxime.

Carbanilinoacetophenoneoxime.

Coumaranoneoxime.

Diacetoneaminoxime.

2:5-Dibenzoylfurfuran, dioximes of.

*Diisobutyl* diketoxime.

Dicoumarylketoxime.

Diethyl diketoxime.

Dihydroxyquinoneoxime.

2:6-Diketo-4-*isopropyl*hexamethylene, dioxime of.

2:6-Diketo-3:4:4-trimethylhexamethylene, dioxime of.

**Oximes**. See:—

2:5-Dimethylbenzaldehyde, oxime of.

4:6-Dimethylcoumaranoneoxime.

1:4-Dimethyl-3-*cyclohexanone*oxime.

Dimethylketopentamethylenecarboxylic acid, oxime of.

$\beta\zeta$ -Dimethyl- $\beta\epsilon$ -octadiene- $\theta$ -al, oxime of.

$\alpha\alpha$ -Dimethylolpropaldehyde, oxime of.

Dimethylpyruvic acid, oxime of.

Dipropyl diketoxime.

Ethylacetaldoximes.

Ethylacetophenoximes.

Ethylacetoximes.

Glyceraldoxime.

Glycuronolactone, oxime of.

Granatonineoxime.

5-Hydroxy-3-methoxy-*p*-xyloquinone-oxime.

Hydroxynaphthaldehyde, oxime of.

Indiazoxime.

Ketoximes.

Ketoximohydroxyethoxydihydropentanthrene.

Laurenonehydroxylamino-oxime.

Limonenoxime.

$\Delta^6$ -Menthene-2-oneoximes.

Methylacetaldoximes.

Methylacetophenoximes.

Methylacetoximes.

4-Methyl-2-*isobutylcyclopentanone*-oxime.

Methylcoumaranoneoximes.

Methylethylacetoxime.

Methylethylketotetramethylenetricarboxylic acid, oxime of.

$\beta$ -Methylhydrindoneoxime.

Opianic acid, *N*-phenyloxime of.

Oxalylidimethylacetoacetic acid, oxime of.

Phenacyllævulic acid, dioxime of.

$\gamma$ -Phenacyl- $\gamma$ -phenylpyrotartaric acid, oxime of.

Pheno-*o*-ketoheptamethylene, oxime of.

Phenylacetylacetophenoneoxime, *iso*-nitroso.

Phthalaldehydic acid, *N*-phenyloxime of.

Propionylformic acid, oxime of.

Propylacetaldoximes.

Propylacetoximes.

Quinolylenephenylene ketoxime.

Succindialdoxime.

$\Delta^1,4$ -Terpadiene-3-oxime-6-one.

Terpineneoxideoxime.

Tetraphenylcyclopentenoloneoxime.

2-*o*-Tolyl diketohydrindene, dioxime of.

5-*p*-Tolyl-3-methylcyclohexenone-oxime.

Triazobenzaldoxime.

Undecenamidoxime.

- o-Oxyazo-compounds**, bromination of, and its bearing on their constitution (HEWITT and PHILLIPS), T., 160; P., 1900, 223.
- iso-Oxyazolonephenylhydrazones**, amino-, and its acetyl derivative (BERGNI), A., i, 776.
- Oxycellulose** (MURUMOW, SACK, and TOLLENS; TOLLENS), A., i, 453. properties of (VIGNON), A., i, 16. detection of (PHILIP), A., ii, 288.
- Oxycelluloses** (NASTUKOFF), A., i, 315.
- Oxydase** in cerebo-spinal fluid (CAVAZZANI), A., ii, 257. in pus (VITALI), A., ii, 672. in valerian (CARLES), A., i, 59. in yeast (GRÜSS), A., ii, 615. rôle of, in the preparation of commercial black tea (ASÖ), A., ii, 679. and peroxydase reactions (HUNGER), A., i, 784.
- Oxydases**, study of the (SARTHOU), A., i, 624. action of, on the production of transitory starch, and detection of (GRÜSS), A., ii, 33.
- 4:5-Oxy-1:3-diphenyl-4-methylsotriazole** and *dinitro-* (PONZIO), A., i, 169.
- Oxygen**, evolution of, from the decomposition of chlorates (SODEAU), T., 247; P., 1900, 209. evolved by *Bacillus pyocyaneus* (PAKES and JOLLYMAN), T., 322; P., 1900, 189. basic properties of (v. BAEYER and VILLIGER), A., i, 658. analogies between carbon, nitrogen and, in similar linkings (ERLENMEYER), A., i, 61. combination of, with silver (BERTHELOT), A., ii, 97. and carbon monoxide, reactions of, in presence of alkalis (BERTHELOT), A., ii, 17. the rendering active of (ENGLER and FRANKENSTEIN), A., i, 657; (MANCHOT), A., ii, 93. active, obtained by electrolysis (BOEHRINGER and SONS), A., ii, 649. formation of, by ferrous oxide (MANCHOT and GLASER), A., ii, 549. action of, on smooth muscle (CLEGHORN and LLOYD), A., ii, 255. absorption of, by yeast (HARDEN and ROWLAND), T., 1231; P., 1901, 189. rôle of, in germination (MAZE), A., ii, 32. estimation of the amounts of, absorbed by proteids exposed to the air (NENCKI and ZALESKI), A., ii, 688.
- Oxygen**, estimation of, in commercial copper (LUCAS), A., ii, 124. estimation of dissolved, in natural waters (WINKLER), A., ii, 696. estimation of dissolved, in waters in presence of nitrites and of organic matter (RIDEAL and STEWART), A., ii, 472.
- Oxygenated compounds**, density of, in relation to constitution and composition (KANONNIKOFF), A., ii, 305.
- Oxyhæmoglobin**. See under Hæmoglobin.
- 5-Oxy-1-methyl-6:7-dihydropurine**. See Deoxyheteroxanthine.
- 5-Oxy-4-methyl-6:7-dihydropurine**. See 4-Methyldeoxyxanthine.
- 2-Oxy-7-methylpurine**, and its salts (GABRIEL and COLMAN), A., i, 428.
- 5 Oxy-1- and -4-methylpurines** (TAFEL and WEINSCHENK), A., i, 106.
- Oxynitriloformic acid**, ethylester (SCHOLL and SCHÖFER), A., i, 359.
- 2-Oxy-3-phenylpurine**, 5:7- and 7:5-chloroamino- (FOURNEAU), A., i, 238.
- 4:5-Oxy-1:3:4-triphenylsotriazole** and *hexanitro-* (PONZIO), A., i, 170.
- Ozone**, molecular weight of (LADENBURG), A., ii, 232; (OTTO), A., ii, 380. density of (LADENBURG), A., ii, 499. action of, on substances containing sulphur and on sulphur (WEYL), A., ii, 311. estimation of (BRUNCK), A., ii, 38; (LADENBURG and QUASIG), A., ii, 420.

## P.

- Palladium**, diffusion of hydrogen through (WINKELMANN), A., ii, 646. estimation and separation of, in platinum ores (LEIDIÉ), A., ii, 62; (LEIDIÉ and QUENNESSEN), A., ii, 695.
- Palm cake and kernels**. See Agricultural Chemistry.
- Palmitic anhydride**. See Hexadecic anhydride.
- Palmitin**, specific heat of (VANDEVYVER-GRAU), A., ii, 47.
- Panama wood**, presence of sucrose in (MEILLÈRE), A., ii, 185.
- Pancreas** and its ferments, immunity in relation to the (DEAN), A., ii, 563. lactase of the (WEINLAND), A., ii, 30. composition of calculi from the (LEGRAND), A., ii, 566.
- Pancreatic juice**, properties of, in starving animals (WERTHEIMER; CAMUS and GLEY), A., ii, 324.
- Pannaric acid** (HESSE), A., i, 596.

- Papain proteolysis**, products of (MENDEL and UNDERHILL), A., i, 355.
- Papaveraceæ**, alkaloids of the (SCHMIDT), A., i, 742.
- Papaverinol** and its derivatives (STUCHLIK), A., i, 41.
- Papayotin**, coagulating action of, on solutions of peptone (KURAÉEFF), A., i, 435.
- Paraffins** in tobacco leaf (THORPE and HOLMES), T., 982; P., 1901, 170; (KISSLING), A., ii, 680.
- Paraffins**, nitro-, condensation products of (SCHOLL), A., i, 359.
- dinitro-*, formation of (PONZIO), A., i, 577.
- Paraformaldehyde**. See under Formaldehyde.
- Paranucleic acid** (LEVENE and ALSBERG), A., i, 300.
- and its iron and copper derivatives (SALKOWSKI), A., i, 242, 434.
- Parasitic worms**, glycogen in (WEINLAND), A., ii, 258.
- Paris green**, estimation of arsenic in (AVERY and BEANS), A., ii, 346, 623.
- Parasite**. See Synchysite.
- Paris quadrifolia*, occurrence of sucrose in the fruit of (KROMER), A., ii, 618.
- Parthenogenesis**, artificial (LOEB; Y. and M. DELAGE), A., ii, 177; (DELAGE), A., ii, 611; (GIES; MATHEWS), A., ii, 665.
- Peas**. See Agricultural Chemistry.
- Peat**, analysis of (BORNTRÄGER), A., ii, 212.
- See also Agricultural Chemistry.
- Peat-meal**. See Agricultural Chemistry.
- Pectenine** and its platinichloride (HEYL), A., i, 738.
- Pectins** (TOLLENS), A., i, 453.
- Peganum Harmala*, alkaloids of (FISCHER), A., i, 405.
- Pelargonic acid**. See Nonoic acid.
- Penicillium brevicaulis*. See Arsenic mould.
- Pentacetyldextrose** (COLLEY), A., i, 671.
- Pentadecanaphthene**, chloro- (MABERY and SIEPLEIN), A., i, 306.
- cyclo***Pentadiene**, oxidation of (ENGLER and FRANKENSTEIN), A., i, 658.
- derivatives of (NOELDECHEN), A., i, 61.
- potassium derivative (THIELE), A., i, 182.
- dibromides* (THIELE), A., i, 181.
- Pentaglycerol**. See Trihydroxypentane.
- 2:4:6:3':4'-Pentamethoxybenzoylacetophenone** (v. KOSTANECKI, RÓŻYCKI, and TAMBOR), A., i, 92; (v. KOSTANECKI), A., i, 335; (DILLER and v. KOSTANECKI), A., i, 476.
- Pentamethylbenzene**, bromination and iodination of (EDINGER and GOLDBERG), A., i, 23.
- 1:2:2:5:5-Pentamethylpyrrolidine**, 3-amino-, and its thiocarbamates (PAULY and SCHAUM), A., i, 607.
- Pentane**, chlorodibromo- (KRASSUSKY), A., i, 247.
- Pentane** (*γ-methylbutane*), *αγ*-dibromo-, action of zinc dust on (IPATIEFF), A., i, 305.
- iso***Pentane**, thermal properties of, compared with those of *n*-pentane (ROSE-INNES and YOUNG), A., ii, 644.
- Pentanedicarboxylic acids**. See:—  
Dimethylglutaric acid.  
Ethylglutaric acid.
- Pentanetetracarboxylic acid**. See Methylbutanetetracarboxylic acid.
- Pentanetricarboxylic acids**. See:—  
Dimethylpropane-*αγγ*-tricarboxylic acid.  
Ethyltricarballic acid.  
Methylbutanetricarboxylic acids.
- 2-cycloPentanolicarboxylic acid**, and its salts and ethyl ester (DIECKMANN), A., i, 540.
- cyclo***Pentanone** and its carboxylic acid and ethyl ester (DIECKMANN), A., i, 539.
- Pentanthrene** and its derivatives (LIEBERMANN and LANZER), A., i, 466.
- n*-**Pentenecarboxylic acid**. See Hexenoic acid.
- cyclo***Pentene-1-carboxylic acid**, 2-amino-, ethyl ester (DIECKMANN), A., i, 539.
- β-Pentene-3-ol** and its acetate, synthesis of (GRIGNARD), A., i, 679.
- Pentenoic acid** (*angelic acid*), hydriodide of, *ψ*-butylene from (WISLICENUS, TALBOT, and HENZE), A., i, 2.
- β*-bromo- (WISLICENUS and HENZE), A., i, 4.
- Pentenoic acid** (*dimethylacrylic acid*), conversion of, into dimethylpyruvic acid (BOUVEAULT and WAHL), A., i, 252.
- amino-, ethyl ester, and its carbamide and phenylcarbamide (BOUVEAULT and WAHL), A., i, 114.
- nitro-, ethyl esters, isomeric (BOUVEAULT and WAHL), A., i, 4, 5, 664.
- action of reducing agents on (BOUVEAULT and WAHL), A., i, 114.
- Pentenoic acid** (*β-methylcrotonic acid*), *α*-cyano-, ethyl ester (KOMPPA), A., i, 114.
- Pentenoic acid** (*tiglic acid*), formation of (KROMER), A., i, 629.

- Pentenoic acid** (*tiglic acid*), hydriodide of,  $\psi$ -butylene from (WISLICENUS, TALBOT, and HENZE), A., i, 2.
- $\beta$ -bromo-** (WISLICENUS and HENZE), A., i, 4.
- cycloPentenyl-diphenylcarbamide**, -diphenylthiocarbamide, and -phenylhydrazine (NOELDECHEN), A., i, 61.
- Pentinene**, complete synthesis of (BERTHELOT), A., i, 247.
- Pentosans**, quantity of, in fruits and vegetables (WITTMANN), A., ii, 414.
- amount of, in gum arabic (HEFELMANN), A., ii, 535.
- of brewers' grains, jute, and luffa (SCHÖNE and TOLLENS), A., ii, 414.
- of seeds, behaviour of the, during germination (SCHÖNE and TOLLENS), A., ii, 267.
- estimation of, by means of the hydrochloric acid phloroglucinol method (KRÖBER), A., ii, 288, 371; (FRAPS), A., ii, 536.
- Pentososes**, fermentation of (SCHÖNE and TOLLENS), A., i, 367.
- Pepsin**, nature of (NENCKI and SIEBER), A., ii, 401.
- action of, on proteids (LAWROFF; DZIERZGOWSKI and SALASKIN), A., ii, 666.
- quantitative action of (KRÜGER), A., ii, 561.
- Peptase** in malt (WEIS), A., ii, 69.
- Peptic activity**, Mett's method of estimating (SAMOJLOFF), A., ii, 401.
- Peptone**, coagulating action of papayotin on solutions of (KURAEFF), A., i, 435.
- detection of, in urine and fæces (FREUND), A., ii, 710.
- Peptone-serum product**, crystalline (BUCHNER and GERET), A., i, 783.
- Peptones** from albumin (PAAL), A., i, 623.
- albumins, albumoses, and syntonins of muscular tissue, differentiation between (BILTBRYST), A., ii, 632.
- Perchloric acid**. See under Chlorine.
- Periodicity**, effect of various compounds in increasing the, of an alloy of aluminium and chromium (OSTWALD), A., ii, 24.
- Perkin reaction**, study of the (MICHAEL and HARTMAN), A., i, 358.
- Perofskite** from Emaese in Val d'Aosta (MILLOSEVICH), A., ii, 398.
- Peroxides**, action of, on toxins (SIEBER), A., ii, 566.
- Perphthalic acid**. See under Phthalic acid.
- Persulphuric acid**. See under Sulphur.
- Petroleum**, theories of the origin of (KLEMENT), A., ii, 319.
- in fossiliferous limestone from Baden (ENGLER and ALBRECHT), A., ii, 662.
- Roumanian, nitrogenous bases in (GRIFFITHS and BLUMAN), A., i, 609.
- Russian, organic bases of (CHLOPIN), A., i, 42.
- occurrence of, in Texas (PHILLIPS), A., ii, 662.
- Texas, composition of (MABERY), A., i, 441.
- See also Naphtha and Shale oil.
- Petzite** from Coolgardie (RICKARD), A., ii, 663.
- from Western Australia (KRUSCH), A., ii, 393.
- See also Tellurides of gold and silver.
- Phases**, liquid and vapour, determination of the refractive power as a method for the investigation of the composition of co-existing (CUNAEUS), A., ii, 213.
- See also under Equilibrium.
- Phellandrene**, constitution of, and reactions of its nitrite (WALLACH and H. and E. LAUFFER), A., i, 89.
- nitrite (SCHREINER), A., i, 600.
- Phenacetin**, colour reaction of, with potassium permanganate (MAAS), A., ii, 210.
- Phenacetylisobutyric acid**, ethyl ester (BLAISE), A., i, 253.
- Phenacyl benzyl ketone**. See Phenylacetylacetophenone.
- Phenacylidenebenzamidine** and its salts, phenylhydrazone, and ethiodide (KUNCKELL), A., i, 294; (KUNCKELL and BAUER), A., i, 758.
- Phenacylidene-p-tolenylamidine** and its hydrochloride (KUNCKELL and BAUER), A., i, 758.
- Phenacyllævulic acid** and its salts and dioxime (KEHRER), A., i, 389.
- Phenacylphenacetin** (GOLDSCHMIDT), A., i, 643.
- $\gamma$ -Phenacyl- $\gamma$ -phenylpyrotartaric acid**, and its esters, salts, anhydride and oxime (STOBBE and RUSSWURM), A., i, 147.
- Phenanthraquinone**, action of phenylhydrazine on (BAMBERGER and GROB), A., i, 280.
- Phenanthrarosinduline** and its dichromate (KEHRMANN and EICHLER), A., i, 421.
- Phenanthrazoxonium** *perbromide* (KEHRMANN), A., i, 484.

- Phenanthrene**, 9-amino-, and its acyl derivatives and picrate (SCHMIDT and STROBEL), A., i, 464.  
 nitro- (m. p. 116–117°) (SCHMIDT), A., i, 76.
- ψ-Phenanthroline-1:3-dicarboxylic acid** (4:7-*quinoquinoline-1:3-dicarboxylic acid*) (WILLGERODT and JABLONSKI), A., i, 50.
- Phenanthroxazine** (JAPP and DAVIDSON), A., i, 401.  
 and its acetyl derivative (BAMBERGER and GROB), A., i, 280.
- Phenanthrylamines**, 2- and 3-, and their acetyl derivatives (WERNER and KUNZ), A., i, 696.
- 9-Phenanthryl-phenylcarbamide**, -phenylthiocarbamide, and -urethane (SCHMIDT and STROBEL), A., i, 464.
- Phenazine-5:10-oxide** (WOHL and AUE), A., i, 612.
- Phenethylidene- and Phenethyl-pyrotartaric acids**, and **Phenethylitaconic acid** (FICHTER and HIRSCH), A., i, 594.
- p-Phenetidine**, chloroacetyl, phenylsulphonacetyl, *p*-tolylsulphonacetyl, thiodiglycolyl, sulphonodiacetyl, and thiocyanacetyl derivatives of (GROTHE), A., i, 79, 80.
- Phenetole**, action of sulphuric acid on (SCHÖBER and BOWERS), A., i, 204.
- Phenetolecarbamide**. See "Dulcin."
- Phenethylmercuric salts** (DIMROTH), A., i, 440.
- 4-Phenetyl-4-methyltrimethylenediacetonimide**, 3:5-dicyano- (GUARESCHI and BALDI), A., i, 346.
- Pheno-α-aminoheptamethylene** and its salts and benzoyl derivatives (KIPPING and HUNTER), T., 609; P., 1901, 68.
- Pheno-α-ketoheptamethylene** and its oxime and semicarbazone; and oxidation of (KIPPING and HUNTER), T., 606; P., 1901, 68.
- Phenol**, electrolysis of, in presence of hydrogen haloids (ZEHLANT), A., i, 382.  
 determination of the avidity of, by the thermochemical method (PLOTNIKOFF), A., ii, 229.  
 distillation of dilute aqueous solutions of (NAUMANN and MÜLLER), A., i, 204.  
 equilibrium between acetone, water and (SCHREINEMAKERS), A., ii, 445.  
 composition of the vapour phase of the system, aniline, water, and (SCHREINEMAKERS), A., ii, 57.  
 composition of the vapour phase in the system water and, with one or two liquid phases (SCHREINEMAKERS), A., ii, 9, 57.
- Phenol**, action of, on benzylidene chloride (MACKENZIE), T., 1216; P., 1901, 150.  
 action of diazobenzene on (BAMBERGER), A., i, 107.  
 action of Millon's reagent on (VAUBEL), A., i, 28.  
 substitution in (LAPWORTH), T., 1267.  
 characteristic reaction of (FIORA), A., ii, 425; (MANSEAU), A., ii, 697.  
 titration of (TELLE), A., ii, 357.  
 estimation of, volumetrically (TOCHER), A., ii, 353.  
 estimation of, in dressings (TELLE), A., ii, 698.  
 estimation of, when mixed with resinous substances, in surgical dressings (THRESH), A., ii, 698.  
 See also Carbohic acid.
- Phenol**, *o*-amino-, condensation of, with phenoxycetic acid and its derivatives (COHN), A., i, 752.  
 2:6-dibromo-4-amino-, and its benzoyl derivative (FORSTER and ROBERTSON), T., 690; P., 1901, 116.  
 2:6-dibromo-4-nitroso-, preparation of, and its acetyl, benzoyl and potassium derivatives; the action of nitric acid on, and reduction of (FORSTER and ROBERTSON), T., 686; P., 1901, 116.  
 chloro- and chloronitro-derivatives of (TARUGI), A., i, 146.  
*pentachloro*-, preparation of (BARRAL and JAMBON), A., i, 27.  
 2:4-*di*- and 2:4:6-*tri*-iodo-, ethers and esters of (BRENANS), A., ii, 322, 643.  
*p*-nitro-, reduction of, by hyposulphurous acid (GOLDBERGER), A., i, 23.  
 2:4:6-*trinitro*-. See Picric acid.  
 3:5-*dinitro*-4-nitroso- (NIETZKI and DIETSCHY), A., i, 197.
- Phenol ethers**, hydrolysis of, by alcoholic potash (STOERMER and KAHLERT), A., i, 533.  
*p*-nitro- and *p*-amino-, and their salts and carbamide derivatives (SPIEGEL and SABBATH), A., i, 533.
- Phenols**, oxidation of, in air (MANCHOT), A., ii, 93.  
 condensation of, with esters of the acetylene series (RUHEMANN and BAUSOR), T., 470; P., 1901, 40; (RUHEMANN and WRAGG), T., 1185; P., 1901, 187.  
 condensation of, with benzoic acid (BISTRZYCKI and NOWAKOWSKI), A., i, 716.  
 action of, on ethyl oxalate (TINGLE and O'BYRNE), A., i, 533.

- Phenols**, condensation products of haloid derivatives of hydroxytolualdehyde and hydroxytoluic acid with (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 712.
- displacement of alkyls from, by nitration (LARTER), P., 1901, 183.
- substances formed in the iodination of (VAUBEL), A., i, 143.
- chlorocarbonates of (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 697.
- aldoximes of, synthesis of (SCHOLL and BERTSCH), A., i, 465.
- Phenols**, amino-, mechanism of the conversion of arylhydroxylamines into (BAMBERGER), A., i, 140, 203.
- Phenols**, list of. See Alcohols and Phenols.
- o*-Phenolsulphonebenzoic chloride, *p*-nitro- (NORRIS), A., i, 134.
- Phenonaphthoxazone**, and 5-*mono*- and 2:5-*di*-amino- and its diacetyl derivative (KEHRMANN and BARCHE), A., i, 48.
- iso*Phenosafranine, preparation and acetyl derivatives of (KEHRMANN and KRAMER), A., i, 52.
- Phenoxazonium** picrate (KEHRMANN), A., i, 484.
- Phenoxide**, sodium, condensation of, with derivatives of  $\alpha$ -bromo-fatty acids and methyl- and ethyl-aniline (BISCHOFF), A., i, 526.
- condensation of, with derivatives of  $\alpha$ -bromo-fatty acids and benz-aniline, diphenylamine, and carbazole (BISCHOFF), A., i, 527.
- condensation of, with  $\alpha$ -bromo-fatty acid amides, toluides, naphthalides, and nitroanilides (BISCHOFF), A., i, 524, 525.
- nitrodithio-, sodium, action of iodine on (BLANKSMA), A., i, 462.
- Phenoxides**, *pentachloro*-, metallic (JAMBON), A., i, 28.
- Phenoxycetamidines**, aromatic (COHN), A., i, 352.
- Phenoxycetic acids**, condensation of, with *o*-aminophenol (COHN), A., i, 752.
- Phenoxycetic anhydride** (CHEMISCHE FABRIK AUF AKTIEN (SCHERING)), A., i, 708.
- Phenoxycetyl-methylanilide** (BISCHOFF), A., i, 526.
- Phenoxybenzoic acid**, 4-*o*-nitro-, and its salts (COOK and HILLYER), A., i, 144.
- $\alpha$ -Phenoxybutyryl chloride (BISCHOFF), A., i, 526.
- $\beta$ -Phenoxyisobutyryl-*p*-nitroanilide (BISCHOFF), A., i, 526.
- $\beta$ -Phenoxyerotic acid and its ethyl ester (RUHEMANN and WRAGG), T., 1189; P. 1901, 188.
- Phenoxymethoxyethoxy-anilinosilicon** and -**menthoxy**silicon (KIPPING and LLOYD), T., 458; P., 1901, 32.
- Phenoxymethoxy-silicon** *dichloride* and -**ethoxy**silicon chloride (KIPPING and LLOYD), T., 457; P., 1901, 32.
- 1-Phenoxymethylbenzoxazole** (COHN), A., i, 752.
- 2-Phenoxymethyl-5-methyl- and -6-ethoxy-benziminazoles** and their salts (COHN), A., i, 352.
- Phenoxydinutrophenylmalonic acid**, ethyl ester (JACKSON and COHOE), A., i, 585.
- 5-Phenoxy-1-phenylpyridazone**, 4-bromo- (BISTRZYCKI and HERBST), A., i, 386.
- $\alpha$ -Phenoxy-propionyl- and -butyryl-diphenylamides (BISCHOFF), A., i, 527.
- $\alpha$ -Phenoxy-propionyl- and -butyryl-ethylanilides (BISCHOFF), A., i, 527.
- $\alpha$ -Phenoxy-propionyl-, and -*n*- and -*iso*-butyryl-methylanilides (BISCHOFF), A., i, 526.
- $\alpha$ -Phenoxy-propionyl-, -*n*- and -*iso*-butyr-, and -*isovaler*-amides and -anilides (BISCHOFF), A., i, 524.
- $\alpha$ -Phenoxy-propionyl-, -*n*- and -*iso*-butyryl- and -*isovaleryl*-benzylanilides (BISCHOFF), A., i, 527.
- $\alpha$ -Phenoxy-propionyl-, -*n*- and -*iso*-butyryl-, and -*isovaleryl-o*-, -*m*-, and -*p*-nitroanilides (BISCHOFF), A., i, 525.
- $\alpha$ -Phenoxy-propionyl-, -*n*- and -*iso*-butyryl-, and -*isovaleryl-o*-, -*m*-, and -*p*-toluides and - $\alpha$ - and - $\beta$ -naphthalides (BISCHOFF), A., i, 525.
- 2- $\gamma$ -Phenoxypropyldihydroisindole** and its salts (FRANKEL), A., i, 45.
- $\beta$ -Phenoxypropylene** (RUHEMANN and WRAGG), T., 1190; P., 1901, 188.
- Phenoxy-*p*-tolyl-*oxy*-isopropyl chloride** and -*isopropylphosphorous acid* (BOYD), T., 1226; P., 1901, 189.
- Phenyl borate** (MICHAELIS and HILLRINGHAUS), A., i, 356.
- alkyl carbonates, *pentachloro*-, preparation of (BARRAL), A., i, 28.
- carbonates (CHEMISCHE FABRIK VON HEYDEN), A., i, 696.
- telluride (STEINER), A., ii, 236.
- p*-tolyl ether, *o*-amino- and *o*-nitro- (COOK and HILLYER), A., i, 144.
- p*-tolyl sulphate, sulphide, and hydrochloride, amino- (V. MEYER, NACKE, and GMEINER), A., i, 265.
- Phenylacetic acid**, *o*-chloro-, and its esters, amide, thioamide, nitrile, anilide, toluides, and phenylhydrazide (MEHNER), A., i, 208.

- Phenylacetic acid**, *p*-chloro- and its anilide, toluidides, phenylhydrazide, 2:5-dinitro- and benzoyl derivatives (MEHNER), A., i, 209.  
*o*-nitro-, methyl ester (GOLDSCHMIDT), A., i, 709.
- $\psi$ -**Phenylacetic acid**. See Norcaradiene-carboxylic acid.
- Phenylacetoneitrile** (*benzyl cyanide*), action of dry silver oxide and ethyl iodide on (LANDER), P., 1901, 59.
- Phenylacetylacetophenone** (*phenylacetylbenzoylmethane*; *phenacyl benzylketone*) and isonitroso-, and oxime and semicarbazone of the isonitroso- (BULOW and GROFOWSKY), A., i, 475.
- Phenylacetyl-methylamide**, *p*-nitro- (ORFON), T., 1353; P., 1901, 200.
- $\beta$ -Phenylacrylic acid**. See Cinnamic acid.
- 3-Phenyladenine** and its salts (FOURNEAU), A., i, 238.
- Phenylalanine** (FISCHER), A., i, 781. from egg-albumin and gelatin (FISCHER), A., i, 745.
- i*-**Phenyl- $\alpha$ -alanine ethylester** (FISCHER), A., i, 193.
- Phenylamino-**. See Anilino-.
- $\delta$ -Phenyl- $\beta$ -amino- $\beta$ -heptene- $\zeta$ -one- $\gamma$ -dicarboxylic acid**, diethyl ester, isomerism of (RABE), A., i, 147.
- p*-**Phenylaminophenylglyoxylic acid** and its phenylhydrazone (BOEHRINGER & SONS), A., i, 714.
- Phenyl-*p*-amino-*o*-tolylsulphone** (NORRIS), A., i, 134.
- Phenylisocamylcarbinol** and its acetate (GRIGNARD), A., i, 679.
- 3-Phenyl-5-amylpyrazole** (MOUREU and DELANGE), A., i, 352.
- Phenylanilino-dithiodiazolone** (BUSCH and HOLZMANN), A., i, 235.
- 1-Phenyl-4-anilino-urazole** and its methyl- and benzyl ethers and nitroso- and nitrosoamine derivatives (BUSCH), A., i, 489.  
 5-thio- (BUSCH and GROHMANN), A., i, 617.
- Phenylanisidinourazole** and its isomeride (BUSCH), A., i, 489.
- Phenyl-*p*-anisylcarbazide-1-carboxylic acids**, 2:5- and 5:2-, ethyl esters (BUSCH and GROHMANN), A., i, 616.
- Phenylaziminobenzene** (*phenylbenzotriazole*), ketochlorides, quinones, and acids of (ZINCKE and PETERMANN), A., i, 104.
- Phenylazo-**. See Benzeneazo-.
- Phenylbenzenylthiourea-phenylamine** (WHEELER), A., i, 487.
- Phenylbenzimidazole**, 2-*p*-amino- (KYM), A., i, 47.
- Phenylbenzimidazoles**,  $\beta$ -amino-, the three isomeric, and their salts, and acetyl and benzoyl derivatives and thiocarbamides of the *m*- and *p*-compounds (MIKLASZEWSKI and V. NIEMENTOWSKI), A., i, 760.
- 7-Phenylbenzotriazin-8-one-5-*p*-benzoic acid** (FULDA), A., i, 226.
- Phenylbenzotriazole**. See Phenylaziminobenzene.
- Phenylbenzoxazole**, 1-*p*-amino- (KYM), A., i, 47.
- Phenylbenzyl-dimethylammonium iodide** and *d*-camphorsulphonate (JONES), A., i, 376.
- Phenylbenzylhydrazine**, action of, on oxalacetic acid (FENTON and JONES), T., 97; P., 1900, 205; 1901, 26.
- Phenylbenzylidene-*p*-phenylenediamine**, *o*- and *p*-nitro- (BANDROWSKI), A., i, 49.
- Phenyl- $\alpha$ -benzylmethylallylammonium salts**, *d*- and *l*- (POPE and HARVEY), T., 828; P., 1901, 120.
- 1-Phenyl-4-benzyl-3-methyl-pyrazole**, and -pyrazolone, and the 5-chloro-derivative of the pyrazole (MICHAELIS, VOSS, and GREISS), A., i, 409.
- $\beta$ -Phenyl- $\gamma$ -benzyl- $\alpha\beta$ -naphthylhydroxyamidine** and its salts (LEY), A., i, 760.
- 3 (or 5)-Phenyl-5 (or 3)-benzyl-isooxazole and -pyrazole** (BULOW and GROTOWSKY), A., i, 475.
- 2-Phenyl-4-benzylsemicarbazide-1-carboxylic acid**, ethyl ester (BUSCH and HEINRICHS), A., i, 617.
- 1:4-Phenylbenzylurazole** (BUSCH and HEINRICHS), A., i, 617.
- Phenylbiuret** (PICKARD and CARTER), T., 843; P., 1901, 123.
- $\alpha$ -Phenylbiuret** (MCKEE), A., i, 757.
- Phenylborobromide** (MICHAELIS and RICHTER), A., i, 355.
- Phenylbromohomocampholic acid** (HALLER and MINGUIN), A., i, 599.
- $\alpha$ -Phenylbromopiperonylcinnamionitrile** (BISTRZYCKI and STELLING), A., i, 718.
- $\beta$ -Phenyl-*n*-butane- $\alpha\gamma\delta$ -tricarboxylic acid** and its salts and trimethyl ester (STOBBE and FISCHER), A., i, 276.
- $\beta$ -Phenyl- $\beta$ -butenoic acid** ( *$\beta$ -phenylvinylacetic acid*),  $\gamma$ -cyano- (GUARESCHI and PEANO), A., i, 631.
- Phenylisobutylcarbinol** and its acetate (GRIGNARD), A., i, 679.
- N*-Phenylbutylene- $\psi$ -thiocarbamide** (STRAUSS), A., i, 17.
- $\beta$ -Phenylbutyric acid**, *dithio*-, ethyl ester, its  $\alpha$ -mono- and -di-methyl and -ethyl derivatives (POSNER and CLAUDIUS), A., i, 705.



- Phenylbutyrolactoneacetic acid** and its salts (FITTIG and SALOMON), A., i, 122.
- Phenylcarbamino-dimethylacrylic acid** (BOUVEAULT and WAHL), A., i, 114.
- Phenylcarbimide** (*phenyl isocyanate*), action of, on diphenyl-, diallyl-, and dinaphthyl-diamines (SENIER and GOODWIN), T., 258; P., 1900, 228.  
action of, on ethyl phenyl-thiol- and -thion-carbazinate (WHEELER and DUSTIN), A., i, 25.
- Phenylcarbimino-2-pyrrolidinecarb-oxylic acid** and anhydride (FISCHER), A., i, 191.
- Phenylchloroacetylhydrazides**, isomeric (KIPPING and HALL), T., 445; P., 1901, 36.
- 1-Phenyl-4-dichloromethyl-5-dichloro-ethylene-1:2:3-triazole** (ZINCKE and PETERMANN), A., i, 106.
- Phenylisocrotonic acid**, polymeric (FITTIG), A., i, 145.
- Phenyldibenzylaminourazole** (BUSCH), A., i, 489.
- 2-Phenyl-4:5-dibenzylcarbazide-1-carb-oxylic acid**, ethyl ester (BUSCH), A., i, 616.
- 2-Phenyl-5 dibenzylcarbazide-1-carb-oxylic acid**, ethyl ester (BUSCH), A., i, 489.
- Phenyldibenzylmethylammonium iodide**, *d*-camphorsulphonate, and *d*-bromocamphorsulphonate (JONES), A., i, 376.
- Phenyldibenzylurazine** (BUSCH), A., i, 616.
- Phenyldicarbylamine** and its isomeride (SABANÉEFF and PROSIN), A., i, 695.
- Phenyldiethylaminourazole** (BUSCH), A., i, 489.
- 2-Phenyl-5-diethylcarbazide-1-carb-oxylic acid**, ethyl ester (BUSCH), A., i, 489.
- $\alpha$ -Phenyl- $\gamma$ -diethylsulphonebutane- $\alpha$ -one** (POSNER), A., i, 15.
- Phenyldihydropyrimidyl mercaptan** (WOHL and WOHLBERG), A., i, 514.
- Phenyldimethylammoniumiodoacetic acid**, ethyl ester (WEDEKIND), A., i, 640.
- Phenyldimethylcarbinol** (GRIGNARD), A., i, 680; (BOEDTKER), A., i, 684.
- 2-Phenyl-1:3-dimethyl-1:3-dibenzoyl-propane** and its isomeride, and the action of ammonia and hydroxylamine hydrochloride on (ABELL), T., 933; P., 1901, 128.
- 2-Phenyl-4:5-dimethyl-oxazoline** and -thiazoline and their picrates and platinichlorides (STRAUSS), A., i, 18.
- 1-Phenyl-3:4-dimethylpyrazole**, 5-halo-gen and nitro- and amino-derivatives, and their salts (MICHAELIS, VOSS, and GREISS), A., i, 407.
- 1-Phenyl-2:3-dimethyl-5-pyrazolone**. See Antipyrine.
- 1-Phenyl-2:5-dimethyl-1:3:4-triazole** and its salts (PELLIZZARI and ALCIATORE), A., i, 571.
- Phenyldi- $\beta$ -naphtholmethane**, and its acetyl derivative and anhydride (HEWITT and TURNER), A., i, 207.
- Phenyldiphenylene-ethane** (WEISSGERBER), A., i, 521.
- Phenyldi-*p*-tolylphosphine** derivatives (MICHAELIS and EIFLER), A., i, 304.
- Phenylealaidylthiocarbamide** (KRAFFT and TRITSCHLER), A., i, 116.
- p*-Phenylenedichlorodipropionic acid** (EPHRAIM), A., i, 689.
- o*-Phenylenediamine**, action of, on isatin (MARCHEWSKI and BURACZEWSKI), A., i, 347.
- m*-Phenylenediamine**, action of ethyl acetonedicarboxylate on (BESTHORN and GARBEN), A., i, 97.  
5-chloro-, and its salts and diacetyl and dibenzoyl derivatives (COHN), A., i, 407.
- Phenylenediamines**, *o*-, *m*-, and *p*-, action of, on 2:3-dibromo- $\alpha$ -naphtha-quinone (LINDENBAUM), A., i, 423.
- 1:3-Phenylenediamine-4-sulphonic acid**, 6-nitro- (BADISCHE ANILIN- and SODA-FABRIK), A., i, 755.
- m*-Phenylenediaminethiosulphonic acids** (CLAYTON ANILINE CO.), A., i, 694.
- p*-Phenylenediisobutyric acid** (EPHRAIM), A., i, 689.
- Phenylenedicarbylamines**, *m*- and *p*- (KAUFLER), A., i, 462.
- p*-Phenylenediethylene**,  $\omega$ -*di*bromo- (EPHRAIM), A., i, 688.
- o*-Phenylenemethylidiamine**, 4-chloro- and its hydrochloride (KEHRMANN and MULLER), A., i, 419.
- $\alpha$ -Phenylethoxycinnamionitriles** and their bromides (BISTRZYCKI and STELLING), A., i, 719.
- Phenylethyl alcohol**. See Benzylcarbinol.
- Phenylethylisobiuret** and its hydrochloride (McKEE), A., i, 757.
- Phenylethylisocarbamide** and its salts and benzoyl derivatives (McKEE), A., i, 755.
- $\beta$ -Phenyl- $\alpha$ -ethylisocrotonic acid**, thio- (POSNER and CLAUDIUS), A., i, 705.
- $\alpha$ -Phenylethyldiguanide** (CRAMER), A., i, 772.
- Phenylethylidenebistetronic acid** (WOLFF and GABLER), A., i, 284.

- 2-Phenyl-1-ethylindole**, 3-*mono*- and *di*-nitro-, and the azoxy-compound of the *mononitro*- (ANGELI and ANGELICO), A., i, 46.
- Phenyl ethyl ketone**, condensation of, with benzaldehyde, and with benzylidenepropiophenone (ABELL), T., 928; P., 1901, 128.
- Phenyl-5-ethyl-2-picolylalkine**. See 5- $\beta$ -Hydroxy- $\beta$ -phenylethyl-2-ethyl-pyridine.
- 1-Phenyl-3-ethyl- and -3-propyl-pyrazolones** (BLAISE), A., i, 363.
- Phenylfluorindine**, chloro- and nitro-, and the hydrochloride of the chloro-compound (KEHRMANN and GUGGENHEIM), A., i, 422.
- Phenylgalactosido-galactosazone and -glucosazone and Phenylglucosido-galactosazone** (FISCHER and ARMSTRONG), A., i, 190.
- $\alpha$ -Phenyl-*o*-gluccoumaronitrile** (FISCHER), A., i, 275.
- Phenylglutaric acid**, oxidation of (VORLÄNDER), A., i, 454.
- Phenylglycine-*o*-carboxylic acid** and its esters, amide, and thioamide (FARBWERK MÜHLHEIM VORM. A. LEONHARDT & Co.), A., i, 710.  
nitrile of. See Methylantranilic acid,  $\omega$ -cyano-.
- Phenylglycine-*o*-carboxylic acid**, nitroso- (VORLÄNDER), A., i, 463.
- Phenylglycolohydrazide** and its hydrochloride and sodium salt (CURTIUS and MÜLLER), A., i, 779.
- 2-Phenylglyoxaline** and its salts and its 1-methyl and 1-ethyl derivatives (WĘWIÓRSKI), A., i, 353.
- Phenylglyoxylic acid**, *p*-amino- and its derivatives (BOEHRINGER & SONS), A., i, 713, 714.
- Phenylguanazole** and its acetyl derivatives and nitroso- (PELLIZZARI and RONCAGLIOLI), A., i, 772.
- Phenylguanidine** and its picrate, platini-chloride, and dibenzoyl derivative (MCKEE), A., i, 756.
- Phenylguanidine**, amino-, and its isomeride, reactions of (PELLIZZARI and RONCAGLIOLI), A., i, 768.  
compounds of, with aldehydes and ketones (PELLIZZARI and RICKARDS), A., i, 769.
- Phenylheptadecenoic acid** (KRAFFT and ROSINY), A., i, 113.
- Phenylcyclohexane** (WILLSTÄTTER and LESSING), A., i, 265.
- Phenylcyclohexylcarbamide** (SCHALL), A., i, 766.
- Phenylhydrazine**, action of acetyl bromo- and acetylchloro-amino-2:4-dichlorobenzenes on (CHATTAWAY and ORTON), T., 467; P., 1901, 39.  
action of, on aldol and on crotonaldehyde (TRENER), A., i, 232.  
action of, on  $\beta$ -chloroallylthiocarbimide (DIXON), T., 554; P., 1901, 49.  
action of, on the isomeric methyl butyrylacetates (BONGERT), A., i, 409.  
action of, on oxalacetic acid (FENTON and JONES), T., 91; P., 1900, 205.  
action of, on phenanthraquinone and retenequinone (BAMBERGER and GROB), A., i, 280.  
combination of, with ketones (PETRENKO-KRITSCHENKO and LORDKIPANIDZÉ), A., i, 505; (PETRENKO-KRITSCHENKO and ELTSCHANINOFF), A., i, 506.  
hydrate and phenylcarbazimate (FREUNDLER), A., i, 776.  
ureide. See Diphenylcarbazide.
- 2-Phenylhydrazine-4-methylpyrimidone** and its salts, dibromide, and 5-ethyl derivative (PELLIZZARI and RONCAGLIOLI), A., i, 768.
- 2-Phenylhydrazinocyclopentene-1-carboxylic acid**, ethyl ester (DIECKMANN), A., i, 539.
- Phenylhydrazonocycloacetic acid**, ethyl ester, derivatives of (LAX), A., i, 230.
- $\alpha$ -Phenylhydroxycinnamonnitriles**, and the action of bromine on, and their acetyl derivatives (BISTRZYCKI and STELLING), A., i, 718.
- Phenylhydroxyethoxyquinoxaline**, *o*-nitro- (MARCHLEWSKI and BURACZEWSKI), A., i, 347.
- Phenylhydroxyhomocampholic acid**, *p*-bromo- (HALLER and MINGUIN), A., i, 600.
- $\beta$ -Phenylhydroxylamine**, action of toluene-*p*-sulphonic acid on (BAMBERGER and RISING), A., i, 202.
- Phenyl-1-hydroxylamine**, 2:4:6-trinitro- (NIETZKI and DIETSCHY), A., i, 197.
- Phenylhydroxyoxamide**, and its acetyl derivative, reactions of (PICKARD and CARTER), T., 842; P., 1901, 123.
- 2-Phenyl-6-*o*-hydroxystilbazole** (2-phenyl-6-*o*-hydroxystyrylpyridine) and its salts (DEHNEL), A., i, 166.
- Phenyliminobenzoyl cyanide**, and its *p*-nitrobenzoyl derivative (SACHS), A., i, 272.
- Phenyliminobenzoylformamide** (SACHS), A., i, 272.
- Phenyliminourazole** and its salts (PELLIZZARI and RONCAGLIOLI), A., i, 773.

- 2-Phenylindole**, 3-*mono*- and *di*-nitro-, and oxidation of the *mononitro*- (ANGELI and ANGELICO), A., i, 46.
- Phenylmercaptotetrazole** (FREUND and PARADIES), A., i, 771.
- Phenylmercuric** salts, amino- (DIMROTH), A., i, 440.
- Phenylmesitylhydroxycarbamide** (BAMBERGER and RISING), A., i, 141.
- $\alpha$ -Phenyl-*p*-methoxycinnamionitrile** and its bromo-derivatives (BISTRZYCKI and STELLING), A., i, 719.
- 3-Phenyl-5-*p*-methoxyphenylisooxazole** and its isomeride (POND and SHOFFSTAL), A., i, 36.
- Phenylmethyl-*n*-acetylglutarimide- $\alpha$ -carboxylic acid** (CARTER and LAWRENCE), P., 1900, 179.
- Phenylmethylallylcarbinol** and its trihydric alcohol (ARBUSOF), A., i, 274.
- Phenylmethylaminourazole** and its methyl ether (BUSCH), A., i, 489.
- 1-Phenyl-4-methylanilinourazole** and its methyl ether (BUSCH), A., i, 616.
- Phenyl-3-methyl-4-benzeneazo-5-pyrazolone**, 1-nitro- (BÜLOW and HÖFFNER), A., i, 240.
- Phenylmethylisobiuret** and its hydrochloride (MCKEE), A., i, 757.
- Phenylmethylcarbamic acid**, 2:4-*di*- and 2:4:6-*tri*-nitro-, esters (VAN ROMBURGH), A., i, 201.
- Phenylmethylisocarbamide** and its salts and benzoyl derivatives (MCKEE), A., i, 756.
- $\alpha$ -Phenyl-*p*-methylcinnamionitrile** (BISTRZYCKI and STELLING), A., i, 719.
- $\beta$ -Phenyl- $\alpha$ -methylisocrotonic acid**, thio- (POSNER and CLAUDIUS), A., i, 705.
- Phenylmethylecyanamide**. See Methylcyananiline.
- $\beta$ -Phenyl- $\alpha$ -methyl- $\alpha$ -cyanoglutaric acid**, ethyl ester, and its isomeride, and the action of acetic chloride on (CARTER and LAWRENCE), P., 1900, 178.
- $\beta$ -Phenyl- $\alpha$ -methyl- $\alpha$ -cyanoglutaric anhydride** (CARTER and LAWRENCE), P., 1900, 179.
- Phenylmethylethylene** and its dibromide (GRIGNARD), A., i, 681.
- 1-Phenyl-3-methyl-4-ethyl-pyrazole**, and its salts and amino- and nitro-derivatives, and -pyrazoline and its nitro-derivative (MICHAELIS, VOSS, and GREISS), A., i, 408.
- Phenylmethylfulvene diperoxide** (ENGLER and FRANKENSTEIN), A., i, 657.
- $\beta$ -Phenyl- $\alpha$ -methylglutaric acid** and its nitro-derivatives, and the action of acetic chloride on (CARTER and LAWRENCE), P., 1900, 180.
- Phenylmethylglutarimide- $\alpha$ -carboxylic acid** and its isomeride, and the action of acetic chloride on (CARTER and LAWRENCE), P., 1900, 179.
- Phenylmethylguanazole** (PELLIZZARI and RONCAGLIOLI), A., i, 772.
- $\beta$ -Phenylmethylhydracrylic acid** and its metallic salts (ARBUSOF), A., i, 275.
- s*-Phenylmethylhydrazine**, mono- and di-acetyl derivatives of (EBERT and REUTER), A., i, 294.
- 2-Phenylmethylhydrazine-4-methylpyrimidone** (PELLIZZARI and RONCAGLIOLI), A., i, 768.
- 3-Phenyl-1-methylhydroxytriazole**, and *m*-nitro-, and acetyl and silver derivatives (YOUNG and OATES), T., 662; P., 1901, 86.
- 2-Phenyl-1-methylmercaptotriazole** (YOUNG and OATES), T., 668; P., 1901, 86.
- Phenylmethylcyclomethylenetriazan** and its hydrogen oxalate (VOSWINCKEL), A., i, 53.
- p*-chloro-, and its hydrochloride (VOSWINCKEL), A., i, 617.
- 2-Phenyl-5-methylphenylcarbazine-1-carboxylic acid** and **2-Phenyl-4-methylphenylsemicarbazidecarboxylic acids**, ethyl esters (BUSCH), A., i, 616.
- 2-Phenyl-6-methylpiperidines**, stereo-isomeric, and their additive compounds; and resolution of, into the active components (SCHOLTZ and MÜLLER), A., i, 41.
- $\alpha$ -Phenyl- $\beta$ -methylpropane** (BODROUX), A., i, 523.
- $\beta$ -Phenyl- $\alpha$ -methyl- $\alpha\gamma$ -propanetricarboxylic acid** (CARTER and LAWRENCE), P., 1900, 179.
- $\alpha$ -Phenyl- $\beta$ -methyl- $\alpha$ -propylene** and its dibromide (GRIGNARD), A., i, 681.
- 1-Phenyl-4-methyl-3-propyl-5-pyrazolone** (BONGERT), A., i, 654.
- 1-Phenyl-3-methylpyrazole** methochloride, 5-chloro-, action of aniline and of ammonia on (MICHAELIS and GUNKEL), A., i, 351.
- 1-Phenyl-3-methylpyrazole-4-carboxylic acid**, chloride, and amide, 5-chloro- (MICHAELIS, VOSS, and GREISS), A., i, 408.
- Phenylmethylpyrazoledicarboxylic acids** (BÜLOW), A., i, 98.
- 1-Phenyl-5-methylpyrazoline** and its salts (TRENER), A., i, 232.
- 1-Phenyl-3-methylpyrazolone** (BONGERT), A., i, 409.
- 1-Phenyl-5-methylpyridazone** and its 3-carboxylic acid (WOLFF and HEROLD), A., i, 503.

- 5-Phenyl-2-methylpyrrole**, 3-nitroso-, and its phenylcarbimide (ANGELICO and CALVELLO), A., i, 747.
- 9-Phenyl-10-methylisorosinduline** and its salts (FISCHER and BRUHN), A., i, 417.
- Phenylmethylsemicarbazide-1-carboxylic acids**, 2:4- and 4:2-, ethyl esters (BUSCH and HEINRICHS), A., i, 617.
- $\alpha$ -Phenyl- $\gamma$ -methyl- $\alpha\gamma$ -tetradiene** (GRIGNARD), A., i, 681.
- Phenylmethylthiadiazoline**, imino-, and its acetyl derivative and platinichloride (YOUNG and EYRE), T., 58; P., 1900, 188.
- 2-Phenyl-1-methyltriazole** (YOUNG and OATES), T., 668; P., 1901, 86.
- Phenylmethyluracil**, and bromo-, and thion- (BEHREND, MEYER, and BUCHHOLZ), A., i, 137.
- Phenylmethylurazoles**, 1:4- and 4:1-, and the sodium salt and acetyl derivative of the 1:4-compound (BUSCH and HEINRICHS), A., i, 617.
- Phenylmorpholine**, dinitro- and nitroso- (MARCKWALD and CHAIN), A., i, 741.
- Phenyl-naphtha- and -isonaphtha-phenazonium**, amino-derivatives, relation between colour and constitution of (KEHRMANN), A., i, 52.
- 7-Phenylnaphthaphenazonium** salts, 9-chloro-5-amino-*p*-amino- (KEHRMANN and KRAZLER), A., i, 420.
- 7-Phenylnaphthaphenazonium**, 3-amino- (isorosinduline No. 13), and its acetyl derivative and salts (KEHRMANN and SILBERSTEIN), A., i, 103.
- 4-amino- (isorosinduline No. 9) (KEHRMANN and STEINER), A., i, 101.
- Phenylnaphthaphenazonium bromide**, 3'-amino-. See *isoRosinduline*, fifteenth isomeride.
- 4'-amino-. See *isoRosinduline*, fourteenth isomeride.
- Phenyl- $\alpha\beta$ -naphthaphenazonium chloride**, 5:3'-diamino-, and its acetyl derivatives and salts (KEHRMANN and NÜESCH), A., i, 767.
- 5:4'-diamino- (KEHRMANN and OTT), A., i, 767.
- 12-Phenylisonaphthaphenazonium**, 4-amino- (isorosinduline No. 12), and its acetyl derivative and its salts (KEHRMANN and STEINER), A., i, 101.
- 12-nitrate, 10-chloro-, and its reactions (KEHRMANN and HIBY), A., i, 418.
- 2-Phenyl- $\alpha$ -naphthiminazole** and its salts and benzoyl derivative (FISCHER, FEZER, and REINDL), A., i, 414.
- Phenyl-naphthionic acid** (WITT and SCHNEIDER), A., i, 699.
- Phenyl- $\alpha$ - and - $\beta$ -naphthylamine-6-carboxylic acids**, 2:4-*d*-nitro-, and their salts, and acetyl and benzoyl derivatives (COHN), A., i, 642.
- Phenyl- $\alpha$ -naphthylcarbamide**, formation of (DIXON), T., 105; P., 1900, 208.
- Phenyl- $\alpha$ - and - $\beta$ -naphthylcarbazoles**, and the nitroso-, acetyl, and benzoyl derivatives of the  $\alpha$ -compound (JAPP and MAITLAND), P., 1901, 176.
- 4-Phenyl-1- $\alpha$ -naphthylthiotriazolone-thiol** and its methyl ether (BUSCH and WOLFERT), A., i, 234.
- 1-Phenyl-4-*p*-nitrobenzeneazo-5-pyrazolone-3-acetic acid** and its ethyl ester (BÜLOW and HÖPFNER), A., i, 240.
- Phenylnitroformaldehyde-phenylhydrazone**, and -*p*-nitrophenylhydrazone (BAMBERGER and SCHMIDT), A., i, 565; (BAMBERGER and GROB), A., i, 567.
- Phenylnitroformaldehydephenylhydrazone**, action of sodium methoxide on (BAMBERGER and GROB), A., i, 296.
- Phenyl-*d*-nitronaphthylamine** (SCHEID), A., i, 521.
- $\beta$ -Phenyl- $\alpha$ -*m*-nitrophenyl- $\gamma$ -benzyl-hydroxyamidine** and its salts (LEY), A., i, 760.
- Phenylnitrosohydrazinesulphonic acid**, potassium salt (VOSWINCKEL), A., i, 618.
- Phenylnitrotolylsemithiocarbazine** (POPE and HIRD), T., 1143; P., 1901, 186.
- Phenyl-*p*-nitro-*o*-tolylsulphone** and its sulphonic acid (NORRIS), A., i, 134.
- Phenyl-1:3-oxazine** (WOHL and WOHLBERG), A., i, 514.
- 5-Phenyl-3-isooxazolone**, benzoyl derivative (PICKARD and NEVILLE), T., 848; P., 1901, 127.
- Phenyl-oxyacrylic acid** (*phenylethylene-oxidecarboxylic acid*), partial conversion of, into phenylpyruvic acid (ERLENMEYER), A., i, 32.
- 3-Phenylcyclopentanone-4-carboxylic acid** and its silver salt and semicarbazide (STOBBE and FISCHER), A., i, 277.
- 3-Phenylcyclopentanonedicarboxylic acid** and its salts, methyl ester, and semicarbazone (STOBBE and FISCHER), A., i, 276.
- Phenylphenanthrarosinduline** (KEHRMANN and EICHLER), A., i, 421.
- 9-Phenylphenanthroline** (9-*phenyl-4:10-quinoguinoline*) and its 5-amino- and 5-nitro-, and its sulphonic acid (WILLGERODT and v. NEANDER), A., i, 51.

- 3-Phenyl- $\psi$ -phenanthroline** (3-phenyl-4:7-quinolino) and its salts, and 6-amino- and 6-nitro- (WILLGERODT and JABLONSKI), A., i, 50.
- 3-Phenyl- $\psi$ -phenanthroline-2-carboxylic acid**, its salts, esters, and 6-amino- and 6-nitro- (WILLGERODT and JABLONSKI), A., i, 50.
- 9-Phenylphenanthroline-7-carboxylic acid**, and its salts, esters, and 5-bromo-, 5-chloro-, and 5-nitro-derivatives and sulphonic acid (WILLGERODT and V. NEANDER), A., i, 51.
- 3-Phenyl- $\psi$ -phenanthroline 6-sulphonic acid** (WILLGERODT and JABLONSKI), A., i, 50.
- Phenylphenotriazone**, 3-*m*- and 3-*p*-nitro- (MEHNER), A., i, 472.
- Phenyl-*p*-phenylenediamine**, *o*- and *p*-nitro- and their acetyl derivatives and hydrochlorides (BANDROWSKI), A., i, 48.
- 1-Phenyl-3-phenylquinolineazone-*p*-carboxylic acid**. See 7-Phenylbenzotriazin-8-one-5 *p*-benzoic acid.
- Phenyl-2-picolyalkine**. See  $\beta$ -Hydroxy- $\beta$ -phenyl-2-ethylpyridine.
- $\alpha$ -Phenylpropane- $\alpha\beta\gamma$ -tricarballic acid** (STOBBE and FISCHER), A., i, 277.
- Phenylpropargyl alcohol** and its acetyl derivative (MOUREU and DESMOTS), A., i, 443.
- Phenylpropionic acid**, ethyl ester, action of, on thymol (RUHEMANN), T., - 918; P., 1901, 155.  
action of, on the sodium derivative of *m*-xylenol (RUHEMANN and WRAGG), T., 1187; P., 1901, 187.
- Phenylpropionic acid**, amino-, conversion of, into kynurenic acid (CAMPS), A., i, 751.
- Phenyl-*n*- and -*iso*-propylcarbinols** and their acetates (GRIGNARD), A., i, 679.
- Phenylpropylpyrazolone** (BONGERT), A., i, 409.
- 3-Phenylpurine**, 2:5-dichloro-7-amino-, and its isomeride and chlorodiamino- (FOURNEAU), A., i, 238.
- 1-Phenylpyrazole-4-carboxylic acid**, methyl and ethyl esters (WISLICHENUS and BINDEMANN), A., i, 362.
- 5-Phenyl-pyrazole- and -pyrazoline-4-carboxylic acids**, methyl esters (v. PECHMANN and BURKARD), A., i, 167.
- 1-Phenyl-5-pyrazolone-3-*p*-nitrobenzeneazooacetic acid**, and its ethyl ester (BULOW and HOPFNER), A., i, 241.
- Phenylpyridine**,  $\alpha$ -*d*-nitro-, chloride, action of alkalis on (SPIEGEL and KATZENELLENBOGEN), A., i, 752.
- Phenylpyrid-*o*-oxazinone-*p*-carboxylic acid**. See Pyridoxazinone-*p*-benzoic acid.
- 3-Phenylpyridylketone-*p*-carboxylic acid** and its salts (FULDA), A., i, 226.
- $\beta$ -5-Phenylpyrrylpropionic acid** (KEHRER), A., i, 389.
- Phenylpyruvic acid** from phenyloxy-acrylic acid (ERLENMEYER), A., i, 226.
- Phenylquinoline**, 2:3-diamino-, hydrochloride of (FREUND), A., i, 690.
- 3-Phenyl-4:7-quinolino**. See 3-Phenyl- $\psi$ -phenanthroline.
- 9-Phenyl-4:10-quinolino**. See 9-Phenylphenanthroline.
- Phenylrosinduline chloride**, 3-amino-, and its acetyl derivative (3-acetyl-amino-5-anilino-7-phenylnaphthaphenazonium chloride) (KEHRMANN and SILBERSTEIN), A., i, 103.  
10-chloro- (10-chloro-5-anilino-7-phenylphenazonium 7-chloride) (KEHRMANN and HIBY), A., i, 419.
- 2-Phenyl-6-stilbazole** (2-phenyl-6-styrylpyridine) and its salts, and **2-Phenyl-6-stilbazoline** (DEHNEL), A., i, 165.
- o*-Phenylsulphonebenzoic acid** and its anilide, chloride and salts (CANTER), A., i, 208.  
*p*-nitro-, and its salts and amide (NORRIS), A., i, 134.
- Phenyltetrazole** and its isomeride, and its nitro- and amino-derivatives (FREUND and PARADIES), A., i, 771.
- Phenyl-dithiocarbazine acid**, *o*- and *p*-nitrobenzyl esters (BUSCH), A., i, 430.
- Phenylthiocarbimide** (phenyl isothiocyanate), reduction of (GUTBIER), A., i, 528.
- Phenylthiocarbiminoacetic acid**, ethyl ester (FISCHER), A., i, 192.
- Phenylthiodiazole** and amino-, and its acetyl derivative, and hydrochloride (YOUNG and EYRE), T., 58; P., 1900, 188.
- Phenylthiodiazolone-anilthiol**, -thio-methane, and disulphide (BUSCH and WOLPERT), A., i, 234; (BUSCH and HOLZMANN), A., i, 235.
- Phenyl-thiol- and -thion-carbazinic acids**, ethyl ester, action of acetic and benzoic thiocyanate and of phenyl-carbimide on (WHEELER and DUSTIN), A., i, 25.
- 3-Phenylthio-uric and - $\psi$ -uric acids** (BOEHRINGER & SONS), A., i, 770.
- Phenyl-*p*-toluinourazoles**, 2:5- and 5:2, and their acetyl derivatives (BUSCH), A., i, 489.
- Phenyl-*p*-tolylamine**, 3-chloro- and 3-chloro-6-amino- (KEHRMANN and KRAZLER), A., i, 420.

- $\beta$ -Phenyl- $\alpha$ -o-tolyl- $\gamma$ -benzylhydroxy-amidine** and its copper salt (LEY), A., i, 760.
- Phenyl- $o$ - and - $p$ -tolylcarbamides**, formation of (DIXON), T., 102; P., 1900, 208.
- Phenyl- $p$ -tolylcarbazide-1-carboxylic acids**, 2:5- and 5:2-, ethyl esters (BUSCH), A., i, 489.
- Phenyltolylglyoxalines**, isomeric, preparation of (KUNCKELL), A., i, 294.
- Phenyl- $p$ -tolylphosphine** derivatives (MICHAELIS and SÖCHTIG), A., i, 301.
- Phenyl- $p$ -tolylsemicartazide-1-carboxylic acids**, 2:4- and 4:2-, ethyl esters (BUSCH and HEINRICHS), A., i, 617.
- Phenyl- $o$ -tolylsulphone** (CANTER), A., i, 208.
- Phenyl- $p$ -tolylthiocarbazide-1-carboxylic acids**, 2:5- and 5:2-, ethyl esters (BUSCH and GROHMANN), A., i, 617.
- 4-Phenyl-1- $p$ -tolyl- and 1-Phenyl-4- $p$ -tolyl-5-thio-1:2:4-triazolone-3-thiols** and their derivatives (BUSCH and WOLPERT), A., i, 234.
- Phenyl- $p$ -tolylurazoles**, 1:4- and 4:1- (BUSCH and HEINRICHS), A., i, 617.
- $C$ -Phenyltriazole** (YOUNG and OATES), T., 665; P., 1901, 86.
- 1-Phenyl-1:3:4-triazole** and its salts (PELLIZZARI and MASSA), A., i, 488.
- 1-Phenyl-1:2:3-triazole-4:5-dicarboxylic acid** (ZINCKE and PETERMANN), A., i, 106.
- 1-Phenyltriazoline**, 5-imino-, and its salts (PELLIZZARI and RONCAGLIOLI), A., i, 769.
- $\alpha$ -Phenyltricarballic acid**. See  $\alpha$ -Phenylpropane- $\alpha\beta\gamma$ -tricarballic acid.
- Phenyltrimethylenylthiocarbamide** (KJNER), A., i, 509.
- Phenyluraminocrotonic acid**, ethyl ester (BEHREND, MEYER, and BUCHHOLZ), A., i, 137.
- 1-Phenylurazole**, 5-thio-, and its 4-amino-derivative (BUSCH and GROHMANN), A., i, 616.
- Phenylurethane**, interaction of, with  $\alpha$ -naphthylamine and  $o$ - and  $p$ -toluidines (DIXON), T., 102; P., 1900, 207.
- Phenylvaleric acid**, preparation of, and the action of aluminium chloride on its chloride (KIPPING and HUNTER), T., 604; P., 1901, 68.
- $\gamma$ -Phenylvaleric acid**, *dithio*-, and its ethyl ester (POSNER and DEINHARDT), A., i, 704.
- 3-Phenylxanthine** (BOEHRINGER & SONS), A., i, 770.
- Philothion** (COSSETTINI), A., i, 438.
- Phloridzin**, action of, on the kidneys (v. KÓSSA), A., ii, 31.
- Phloroglucinol** ethers, influence of the substituting radicle on the tautomerism of (KAUFLEDER), A., i, 207.
- benzyl ethers (KAUFLEDER), A., i, 206.
- trimethylether (HERZIG and KASERER), A., i, 206.
- Phloroglucinolcarboxylic acid**, methyl ester, and its acetates (HERZIG and WENZEL), A., i, 473.
- methyl ether and its methyl ester (HERZIG and WENZEL), A., i, 473.
- Phœnix canariensis*, composition of the albumen of the seeds of (BOURQUELOT and HÉRISSEY), A., ii, 619.
- Phorone**, sulphonal derivatives of (POSNER), A., i, 474.
- Phosgene**. See Carbonyl chloride.
- Phosphates**. See under Phosphorus.
- Phosphine**. See Hydrogen phosphide.
- Phosphines**, chloro-, aromatic, and their derivatives (MICHAELIS), A., i, 300.
- Phosphorescence** in liquid hydrogen (DEWAR), A., ii, 598.
- Phosphorite**, experiments with (ENGELHARDT), A., ii, 276.
- Phosphorus**, space configuration of the valencies of (CAVEN), P., 1901, 26.
- latent heat of vaporisation of (DE FORCRAND), A., ii, 641.
- temperature of ignition of (EYDMANN), A., ii, 312.
- amorphous, composition of (FITTICA), A., ii, 312.
- solubility of, in aqueous alcoholic potash (BURGESS and CHAPMAN), T., 1243; P., 1901, 190.
- conversion of, into antimony (FITTICA), A., ii, 59.
- alleged conversion of, into arsenic (CHRISTOMANOS; FITTICA), A., ii, 59.
- in nucleins (ASCOLI), A., i, 108.
- excretion of, during inanition (SCHULZ and MAINZER), A., ii, 407.
- oxygen compounds, excretion of (GAMEL), A., ii, 610.
- Phosphorus trichloride**, preparation of (GRAEBE), A., ii, 309.
- action of thiocyanate on (DIXON), T., 545; P., 1901, 50.
- tri-* and *penta*-chlorides, compounds of, with boron bromide (TARIBILE), A., ii, 153.
- action of, on glycerol diaryl ethers (BOYD), T., 1221; P., 1901, 188.
- Phosphoryl chloride**, preparation of (ULLMANN and FORNARO), A., ii, 551.
- action of lead thiocyanate on (DIXON), T., 548; P., 1901, 50.

**Phosphorus:—**

**Phosphoryl** chloride as a solvent in cryoscopy (ODDO), A., ii, 492.  
organic derivatives of (CAVEN), P., 1901, 26.

**Phosphorus di- and tri-iodide**, action of boron bromide on (TARIBLE), A., ii, 153.

**suboxide** (MICHAELIS and v. AREND), A., ii, 153; (BESSON), A., ii, 502.  
non-existence of (BURGESS and CHAPMAN), T., 1235; P., 1901, 189.

**Phosphoric oxide**, heat of formation of (DE FORCRAND), A., ii, 641.

**Hypophosphorous acid**, action of, on acetone (MARIE), A., i, 635.

**Phosphorous acid**, estimation of, volumetrically (KÜHLING), A., ii, 38.

**Phosphoric acid**, acidimetry of (BERTHELOT), A., ii, 502, 504, 551; (CAVALIER), A., ii, 502.

influence of diet on the, in urine (MAUREL), A., ii, 565.

*role* of, in animal life (WRÓBLEWSKI), A., ii, 328.

Kilgore's method for the estimation of (WILLIAMS), A., ii, 344.

estimation of, as ammonium phosphomolybdate (PELLET), A., ii, 575.

estimation of, as phosphomolybdic oxide (SEYDA), A., ii, 689.

estimation of, in presence of much iron oxide (PELLET), A., ii, 477.

estimation of, in ashes, manures, and soils by the direct weighing of the phosphomolybdate precipitate (v. LORENZ), A., ii, 278.

estimation of, in manures (LEDoux), A., ii, 576.

estimation of, in basic slags (PAPEŽ), A., ii, 192.

estimation of, in soils (GULLY), A., ii, 576.

soluble in water, estimation of, in superphosphates (v. SZÉLL), A., ii, 476.

estimation of, in wines (SARTORI; Woy), A., ii, 344.

See also Agricultural Chemistry.

**Phosphates** from Moravia (v. JOHN), A., ii, 248.

insoluble, formation of, by double decomposition (BERTHELOT), A., ii, 503.

influence of, on the fermentative action of yeast extract (WRÓBLEWSKI), A., ii, 328, 616.

mineral, detection of, in basic slags, bone meal, superphosphates and animal charcoal (v. LORENZ), A., ii, 193.

LXXX, ii.

**Phosphorus:—**

**Metaphosphoric acid**, velocity of hydration of (MONTEMARTINI and EGIDI), A., ii, 551.

**Superphosphates**, detection of mineral phosphates in (v. LORENZ), A., ii, 193.

estimation of phosphoric acid soluble in water in (v. SZÉLL), A., ii, 476.

**Phosphorus**, detection and estimation of:—

detection of, by the Blondlot-Dusart method, in poisoning cases (HALÁSZ), A., ii, 343.

estimation of, in acetylene and other combustible gases (EITNER and KEPPELER), A., ii, 689.

estimation of, in iron and steel (IBBOTSON and BREARLEY), A., ii, 343.

estimation of, in phosphorised oils (STICH), A., ii, 422; (FRANKEL), A., ii, 423.

estimation of, in potable waters (WOODMAN and CAYVAN), A., ii, 344; (LEPIERRE), A., ii, 689.

**Phosphorus-arsenic-antimony group**, replacements in the (KRAFFT and NEUMANN), A., ii, 235.

"**Phosphorus trithiocyanate**," action of aniline and *o*-toluidine on (DIXON), T., 546; P., 1901, 51.

"**Phosphoryl trithiocyanate**," action of aniline, ammonia, and *o*-toluidine on (DIXON), T., 548; P., 1901, 51.

**Phosphotungstic acid**, compounds of, with ketones (v. BAEYER and VILLIGER), A., i, 660.

**Photobacteria**, use of, in the investigation of the chlorophyll function (BEYERINCK), A., ii, 523.

**PHOTOCHEMISTRY:—**

**Light**, chemical action of (CIAMICIAN and SILBER), A., i, 36, 329, 390, 547.

action of, on the interaction of alcohols with ketones and aldehydes (CIAMICIAN and SILBER), A., i, 329.

action of, on ammonium oxalate (GILLOT), A., i, 119.

action of, on diazo-compounds (RUFF and STEIN), A., i, 619; (GREEN, CROSS, and BEVAN), A., ii, 634.

sensitiveness of fluorescein, its substituted derivatives, and the leuco-bases to (GROS), A., ii, 433.

action of, on the decomposition of hydrogen iodide (PINNOW), A., ii, 634.

## PHOTOCHEMISTRY:—

**Light**, sensitiveness of hydrogen peroxide to, in aqueous solution on addition of ferro- and ferri-cyanide (KISTIAKOWSKY), A., ii, 58.

influence of, on aqueous solutions of potassium ferricyanide (MATUSCHEK), A., i, 455, 584, 636, 677.  
action of, on aqueous solutions of potassium ferrocyanide (MATUSCHEK), A., i, 635, 636.

action of, on the action of sulphur dioxide on potassium ferro- and ferri-cyanide (MATUSCHEK), A., i, 635.

action of, on silver chloride in presence of hydrogen (JOUNIAUX), A., ii, 506.

influence of the nature and intensity of, on the inversion of sucrose by mineral acids (GILLOT), A., i, 127.

absorption of, new method of testing colourless carbon compounds for (PINNOW), A., ii, 368.

**Photochemical** effect, influence of the medium on the, in silver bromide emulsions (ABEGG and IMMERWAHR), A., ii, 217.

induction (ABEGG and IMMERWAHR), A., ii, 217.

**Photographic** action, effect of the temperature of liquid air and hydrogen on (DEWAR), A., ii, 598.

of radio-active lead salts (HOFMANN and STRAUSS), A., ii, 655.

development, theory of (PRECHT; PRECHT and STRECKER), A., ii, 1.  
printing, the diazotype process in (RUFF and STEIN), A., i, 619; (GREEN, CROSS, and BEVAN), A., ii, 634.

**Radiations** from radium, physiological action of (GIESEL), A., ii, 99.

**Radioactive** lead (HOFMANN and STRAUSS), A., ii, 19, 159, 385, 655.

and rare earths (HOFMANN and STRAUSS), A., ii, 19.

substances (GIESEL), A., ii, 99.

action of cathode rays on (HOFMANN, KORN, and STRAUSS), A., ii, 216.

**Radio-activity** of salts of radium (CURIE and DEBIERNE), A., ii, 589.

induced by radium salts (BECQUEREL), A., ii, 215; (CURIE and DEBIERNE), A., ii, 216, 298.

## PHOTOCHEMISTRY:—

**Cathode rays**, action of, on radio-active substances (HOFMANN, KORN, and STRAUSS), A., ii, 216.

**Röntgen rays**, laws of transparency of matter for (BENOIST), A., ii, 215, 216, 308; (HÉBERT and REYNAUD), A., ii, 215.

**Polarisation**:—

**Rotation**, influence of a heterocyclic group on (FRANKLAND and ASTON), T., 511; P., 1901, 41.

of optically active compounds, influence of solvents on (PATTERSON), T., 167, 477; P., 1900, 176; 1901, 40.

of active amyl derivatives (GUYE), A., i, 442.

of dextrose, change of the (OSAKA), A., i, 127.

of *d*-dimethoxysuccinic acid and its salts and esters (PURDIE and IRVINE), T., 959; P., 1901, 157.

of ethereal dimethoxysuccinates and tartrates, influence of solvents on (PURDIE and BARBOUR), T., 971; P., 1901, 158.

of dipyromucyltartaric methyl and ethyl esters (FRANKLAND and ASTON), T., 519; P., 1901, 41.

of certain ethers and esters (GUYE), T., 475; P., 1901, 48.

of the amides, anilides, and *o*- and *p*-toluidides of glyceric acid (FRANKLAND, WHARTON, and ASTON), T., 266; P., 1901, 6.

of lecithin (ULPIANI), A., i, 491, 498.

of lichen acids (SALKOWSKI), A., i, 152.

of ethyl *n*-acyl-*l*-malates (REITTER), A., ii, 214.

of malates, influence of molybdic acid and molybdates on (ITZIG), A., i, 580.

of sugar, measurement of the, and its variation with temperature and with the wave-length of the light used (PELLAT), A., i, 672.

of tartrates, influence of molybdates and tartrates on (ITZIG), A., i, 448.

of methyl tartrate (PATTERSON and DICKINSON), T., 283; P., 1901, 4.

of ethyl *sec*-octyl tartrate and its dibenzoyl and diacetyl derivatives (McCRAE), T., 1106; P., 1901, 186.

**Rotation dispersion** of malic acid (WORINGER), A., ii, 214.



## PHOTOCHEMISTRY :—

- Magnetic rotation** in liquefied gases under atmospheric pressure, apparatus to determine (SIERTSEMA), A., ii, 5.
- of ring compounds yielding vapours which are rendered luminous by exposure to Tesla rays (KAUFFMANN), A., i, 318.
- of tetramethylenecarbinol (PERKIN), T., 331; P., 1901, 33.
- Multitrotation** of the phenylhydrazones of dextrose (SIMON and BÉNARD), A., i, 257.
- Refraction**, determination of, as a method for the investigation of the composition of co-existing liquid and vapour phases (CUNAEUS), A., ii, 213.
- of argon, helium, krypton, neon, and xenon (RAMSAY), A., ii, 141.
- of bromine (RIVIÈRE), A., ii, 1.
- of liquid hydrogen (DEWAR), A., ii, 597.
- of solutions of calcium chloride (BREMER), A., ii, 141.
- of tellurium in its compounds (PELLINI and MENIN), A., ii, 94.
- of hydro-derivatives of cyclic chains (PELLINI), A., ii, 365.
- of mixtures of liquids (DE KOWALSKI), A., ii, 537.
- of aqueous carbohydrate solutions (STOLLE), A., i, 368, 507.
- of chloral hydrate in solution (RUDOLPHI), A., ii, 489.
- of colloid piperine (MADAN), T., 925; P., 1901, 127.
- of tetramethylenecarbinol (PERKIN), T., 331; P., 1901, 33.
- of uranium sulphate (OECHSNER DE CONINCK), A., ii, 660.
- Dispersion** of bromine (RIVIÈRE), A., ii, 1.
- of cyclic chains and their hydro-derivatives (PELLINI), A., ii, 365.
- of colloid piperine (MADAN), T., 926; P., 1901, 127.
- Spectrum**, Swan (SMITHELLS), A., ii, 366; (BALY and SYERS), A., ii, 633.
- Spectra**, absorption, and chemical constitution of saline solutions, action of heat on (HARTLEY), A., ii, 53.
- of flames from operations in the open hearth and basic Bessemer processes (HARTLEY and RAMAGE), A., ii, 366.
- infra-red, of the alkalis and alkaline earths (LEHMANN), A., ii, 142.

## PHOTOCHEMISTRY :—

- Spectra**, arc, of some metals as influenced by an atmosphere of hydrogen (CREW), A., ii, 81.
- of the gases of the atmosphere (RAYLEIGH), A., ii, 141.
- of the more volatile atmospheric gases, which are not condensed at the temperature of liquid hydrogen (LIVEING and DEWAR), A., ii, 213.
- of argon, krypton, and xenon (LIVEING and DEWAR), A., ii, 598.
- of alumina and nitrogen (BERNDT), A., ii, 367.
- band, of nitrogen in oscillatory spark (HEMSALECH), A., ii, 433.
- of carbon (LEHMANN), A., ii, 142.
- of cyanogen (BALY and SYERS), A., ii, 633.
- luminescence, of the rare earths (BAUR and MARC), A., ii, 634.
- of gadolinium and samarium (DEMARÇAY), A., ii, 102.
- of hydrogen and some of its compounds (TROWBRIDGE), A., ii, 633.
- of solutions of iodides (HAGENBACH), A., ii, 434.
- of silicon (HARTLEY), A., ii, 367.
- arc, of vanadium (LOCKYER and BAXANDALL), A., ii, 489.
- of carbon compounds (SMITHELLS), A., ii, 366; (BALY and SYERS), A., ii, 633.
- of cyanogen compounds (HARTLEY, DOBBIE, and LAUDER), T., 848; T., 1901, 125.
- of bromoanilic and chloroanilic acids and their alkali salts (FIORINI), A., ii, 367.
- of indophenols (LEMOULT), A., i, 232; (BAYRAC and CAMICHEL), A., i, 296; (CAMICHEL and BAYRAC), A., i, 296; ii, 297.
- of methylfurfuraldehyde (OSHIMA and TOLLENS), A., ii, 484.
- of the azo-dyes from  $\beta$ -naphthol and  $\alpha$ -naphthylaminesulphonic acids (VALENTA), A., i, 239.
- of phenylnaphthaphenazonium salts (KEHRMANN and NÜESCH), A., i, 767.
- of dyes from triphenylmethane (CAMICHEL and BAYRAC), A., i, 296.
- of triphenylmethane colouring matters in relation to their chemical constitution (LEMOULT; CAMICHEL), A., i, 100.
- of the colouring matter of beetroot (FORMÁNEK), A., ii, 35.

## PHOTOCHEMISTRY:—

- Spectra** of the yellow colouring matters accompanying chlorophyll (SCHUNCK), A., i, 734.  
 of blood in presence of formaldehyde (TOLLENS), A., i, 492.  
 of the colouring matters of blood (FORMÁNEK), A., ii, 711.  
 lamps for (BECKMANN), A., ii, 53, 81.
- Spectrographic analysis** of minerals, simple method for the (HARTLEY and RAMAGE), T., 61; P., 1900, 191.  
 sensitiveness of the reactions based on (SCHULER), A., ii, 633.  
 rapid, of gases, practical methods for the (BERTHELOT), A., ii, 684.
- Photography.** See Photochemistry.
- Phthalaldehydic acid** benzoylhydrazone and N-phenyloxime (BISTRZYCKI and HERBST), A., i, 387.
- Phthalazonecarboxylic acid**, its ammonium salt, ethyl ester, and chloride (FRÄNKEL), A., i, 44.
- Phthalic acid**, 2:4-diiodophenyl ester (BRENANS), A., i, 643.  
 methyl ethyl ester and methyl chloride (MEYER), A., i, 750.
- Phthalic acid**, 4:5-di-bromo-, and its esters (BRÜCK), A., i, 719.  
*dichloro-*, Le Royer's (SEVERIN), A., i, 389.  
 3:4:6-trichloro- (GRAEBE and ROSTOWZEW), A., i, 543.  
*diiodo-* (EDINGER and GOLDBERG), A., i, 23.  
 3-nitro-, preparation and esterification of (MCKENZIE), T., 1135; P., 1901, 186.  
 esterification of (WEGSCHEIDER and LIPSCHITZ), A., i, 32; (WEGSCHEIDER), A., i, 325.  
*active-* and *iso-amyl* esters (MARKWALD and MCKENZIE), A., i, 249.  
 4-nitro-, esterification of (WEGSCHEIDER and LIPSCHITZ), A., i, 32.
- Phthalic acid peroxide** and its ethyl ester (v. BAEYER and VILLIGER), A., i, 326.
- Perphthalic acid** (v. BAEYER and VILLIGER), A., i, 326.
- iso***Phthalic acid**, *diiodo-* (EDINGER and GOLDBERG), A., i, 22.
- Phthalic anhydride**, 3:4-*dichloro-*, and its imide and phenylimide (FERRAND), A., i, 637.  
 3:4:6-trichloro- (GRAEBE and ROSTOWZEW), A., i, 543.  
 3-nitro-, preparation of (MCKENZIE), T., 1137.

- Phthalic chloride**, action of, on quin-aldine (EIBNER and LANGE), A., i, 348.
- Phthalide**, 4:5-di-bromo- (BRÜCK), A., i, 720.
- Phthalimide**, 3:4:6-trichloro- (GRAEBE and ROSTOWZEW), A., i, 543.  
 4-nitro- (FRÄNKEL), A., i, 44.
- Phthalimidine**, 4:5-di-bromo-, and its nitroso-derivative (BRÜCK), A., i, 719.
- $\delta$ -Phthalimino- $\alpha$ -bromovaleric acid** (FISCHER), A., i, 191.
- $\gamma$ -Phthaliminobutyric acid**,  $\alpha$ -bromo- and  $\alpha$ -amino- (FISCHER), A., i, 675.
- $\beta$ -Phthaliminoethylbromomalonic acid**, ethyl ester (FISCHER), A., i, 674.
- $\gamma$ -Phthaliminopropylbromomalonic acid**, and its ethyl ester (FISCHER), A., i, 191.
- $\beta$ -Phthaloylglutaric acid** and its salts and ketodilactone (FITTIG and GOTTSCHKE), A., i, 122.
- Phyllocyanin**, reduction of, to hæmopyrrole (NENCKI and MARCHLEWSKI), A., i, 554.
- Physico-chemical processes**, law of (LEWIS), A., ii, 10, 639.
- Physiological action**, relationship between, chemical constitution, and chemical change in the organism (HILDEBRANDT), A., ii, 614.  
 relation between chemical constitution and, in the piperidine series (R. and E. WOLFFENSTEIN), A., ii, 566.  
 of aconitine, pseudaconitine and japonitine (CASH and DUNSTAN), A., ii, 613.  
 of pyraconitine and of methylbenzaconine in relation to their constitution (CASH and DUNSTAN), A., ii, 612.  
 of the three arabinoses (SALKOWSKI; NEUBERG and WOHLGEMUTH), A., ii, 521.  
 of aspirin (SINGER), A., ii, 408.  
 of cacodylic acid (HEFFTER), A., ii, 464.  
 of carbostyryl and kynurin (v. FENYVÉSSY), A., ii, 31.  
 of carone (RIMINI), A., ii, 522.  
 of cereic acid, pectenine, and pilocereine (HEYL), A., i, 738.  
 of chloroform and ether (WRIGHT), A., ii, 180, 408.  
 of coriamyrtin and tutin (EASTFIELD and ASTON), T., 124; P., 1900, 212.  
 of some cyanopyridone derivatives (DERIU), A., ii, 328.  
 of drugs (NOËL-PATON and EASON), A., ii, 253.  
 of epinephrine sulphate (HUNT), A., ii, 259.

- Physiological action** of three poisonous fungi (CARTER), A., ii, 409.  
 of glaucine (SCHMIDT), A., i, 742.  
 of *d*-gluconic acid (MAYER), A., ii, 261.  
 of glycerol (LYLE), A., ii, 181.  
 of guanilic acid (BANG), A., ii, 408.  
 of melanoidin and spongio-melanoidin (ROSENFELD), A., ii, 180.  
 of mucus (CHARRIN and MOUSSU), A., ii, 180.  
 of extracts of nervous tissues (HALLIBURTON), A., ii, 181.  
 of nicotine (LANGLEY), A., ii, 671.  
 of nitrilophenols (FIQUET), A., i, 469.  
 of aromatic nitro-compounds (WALKO), A., ii, 669.  
 of orchitic extracts (DIXON), A., ii, 259.  
 of phenacylphenacetin and triphenylguanidine guaiacolsulphonate (GOLD-SCHMIDT), A., i, 643.  
 of 1-phenyl-1:3:4-triazole (PELLIZZARI and MASSA), A., i, 488.  
 of protoplasmic poisons (ROSTOSKI), A., ii, 261.  
 of some purine derivatives (SCHMIEDEBERG), A., ii, 674.  
 of pyrimidine compounds (STREUDEL), A., ii, 409.  
 of radium rays (GIESEL), A., ii, 99.  
 of pure sodium chloride solutions (CUSHING), A., ii, 671.  
 of strychnine (HARE), A., ii, 522.  
 of suprarenal extracts (HUNT), A., ii, 259; (LANGLEY), A., ii, 673.  
 of tellurium compounds (MEAD and GIES), A., ii, 261.  
 of substances from the thyroid (v. CYON and OSWALD), A., ii, 180.
- Phytolacca**, detection of, in wine (BELLIER), A., ii, 210.  
*Picea vulgaris*, balsam of (TSCHIRCH and BRÜNING), A., i, 91.
- Piceapimaric**, **Piceapimarinic**, and **Piceapimarolic acids** (TSCHIRCH and BRÜNING), A., i, 91.
- Picoline**, compounds of, with metallic salts (TOMBECK), A., i, 164, 267.
- $\alpha$ -Picoline** from Scottish shale oil (GARRETT and SMYTHE), P., 1900, 190.  
 specific heat and latent heat of evaporation of (KAHLENBERG), A., ii, 492.  
 action of, on substituted aromatic aldehydes (ROTH), A., i, 165; (BACKE), A., i, 562.
- 3-Picoline**, action of bromine on (DEHNEL), A., i, 164.
- Picolinic chloride** (MEYER), A., i, 407.
- 3-Picolylalkine**. See 3-Hydroxymethylpyridine.
- Pieramide**, additive compounds of, with  $\alpha$ - and  $\beta$ -naphthylamine (SUDBOROUGH), T., 532; P., 1901, 44.
- Pieric acid** (2:4:6-trinitrophenol), thallium salt, physical isomerism of (RABE), A., i, 697.  
 methyl and ethyl esters, additive compounds of, with  $\alpha$ -naphthylamine (SUDBOROUGH), T., 532; P., 1901, 44.
- iso***Pieric acid** and its potassium salt (NIETZKI and DIETSCHY), A., i, 197.
- Pierylphenylethylideneoxycyclotriazan** (VOSWINCKEL), A., i, 54.
- Pigment**,  $C_{16}H_{18}O_2N_2$ , orange, from *Uraster rubens* (GRIFFITHS and WARREN), A., i, 94.
- Pigments**, solubility of, in fats and soaps (NERKING), A., ii, 117.
- Figs.** See Agricultural Chemistry.
- Pilocarpine**, constitution of, and its dibromo-derivative (JOWETT), T., 580, 1331; P., 1901, 56, 198.  
 oxidation of (PINNER and KOHLHAMMER), A., i, 340.
- iso***Pilocarpine**, action of bromine, and various reagents on, and its oxidation (JOWETT), T., 582, 1333; P., 1901, 56, 198.  
*mono*- and *di*-bromo-, and the reduction and oxidation of the dibromo-derivative (JOWETT), T., 583; P., 1901, 56.
- iso***Pilocarpinic acid** and *mono*- and *di*-bromo-, and the action of reducing agents on the bromine derivatives (JOWETT), T., 583; P., 1901, 56.
- iso***Pilocarpinolactone** (JOWETT), T., 594; P., 1901, 56.
- Pilocereine** and its aurichloride and platinichloride (HEYL), A., i, 738.
- Pilopic acid**, and its constitution, methyl ester, anilide barium and acid strychnine salts (JOWETT), T., 580, 1335; P., 1901, 56, 198.
- Pilopinic acid** and its ethyl ester (JOWETT), T., 585; P., 1901, 56.
- Piluvic acid**,  $C_8H_{12}O_5$ , and its esters (PINNER and KOHLHAMMER), A., i, 340.
- Pimaric**, **Pimarinic**, and  $\alpha$ - and  $\beta$ -**Pimarolic acids** (TSCHIRCH and BRÜNING), A., i, 220.
- i*-**Pimaric acid** from sandarac resin, and its salts, and ethyl ester (HENRY), T., 1151; P., 1901, 187.
- n*-**Pimelic acid** and the preparation and electrolysis of its ethyl potassium salt (WALKER and LUMSDEN), T., 1198; P., 1901, 188.
- Pinacone**,  $C_{18}H_{30}O_2$ , from the reduction of *Dd*-fenchocamphorone (WALLACH and NEUMANN), A., i, 333.

- d-Pinene** from *Alpinia malaccensis* (VAN ROMBURGH), A., i, 219; (SCHIMMEL & Co.), A., i, 394.  
 from sandarac resin (HENRY), T., 1150; P., 1901, 187.
- Pine trees.** See Agricultural Chemistry.
- Pinocamp酚enic acid** and its nitrile, and **Pinocamphylamine** and its acetyl and carbamide derivatives (WALLACH and ROJAHN), A., i, 90.
- Pinoresinol**, dry distillation of (BAMBERGER and VISCHNER), A., i, 220.
- Pinus Pinaster*, the resin-balsam of (TSCHIRCH and BRÜNING), A., i, 220.
- Pinus sylvestris*, resin of (TSCHIRCH and NIEDERSTADT), A., i, 397.
- l-Pipecolic acid** (l-piperidine-2-carboxylic acid), and its hydrochloride and salts (WILLSTÄTTER), A., i, 739.
- Piperidine**, action of, on  $\beta$ -chloroallylthiocarbimide (DIXON), T., 559; P., 1901, 49.  
 action of amidosulphuric acid on (PAAL and HUBALECK), A., i, 745.  
 action of nitrohydroxylaminic acid on (ANGELI), A., i, 57.
- 2:6-Piperidinedicarboxylic acids**,  $\alpha$ - and  $\beta$ -, and their amides, hydrobromides, and salts, synthesis of (FISCHER), A., i, 746.
- Piperidine series**, stereochemistry in the (HOHENEMSER and WOLFFENSTEIN), A., i, 606; (MARCUSE and WOLFFENSTEIN), A., i, 608; (GROSCHUFF), A., i, 745.  
 relation between chemical constitution and physiological action in the (R. and E. WOLFFENSTEIN), A., ii, 566.  
 determination of the dielectric constants of substances of the (LADENBURG), A., ii, 634.
- Piperidine-1- and -C-sulphonic acids**, and their salts (PAAL and HUBALECK), A., i, 745.
- 11-Piperidino flavinduline** and its dichromate (KEHRMANN and EICHLER), A., i, 421.
- 2-Piperidino- $\alpha$ -naphthaquinone-3-malonic acid**, ethyl ester (LIEBERMANN and LANSER), A., i, 467.
- Piperidylcyclopentene** and its salts (NOELDECHEN), A., i, 61.
- Piperine**, the colloid form of, and its dispersive and refractive powers (MADAN), T., 922; P., 1901, 127.
- Piperonalhydroxamic acid** and bromo- (ANGELICO and FANARA), A., i, 708.  
 copper salt (RIMINI), A., i, 451.
- Piperonylacetylene** (FEUERSTEIN and HEIMANN), A., i, 465.
- Piperonylacrylic acid**, its methyl and ethyl esters and dibromide (FEUERSTEIN and HEIMANN), A., i, 465.
- Piperonylamide** (RUPE and v. MAJEWSKI), A., i, 103.
- Pipette**, a calibrating mercury (BELL), P., 1901, 179.
- Piscidic acid**, and its hydrogen ethyl ester, dianilide, and diacetyl derivative, and the action of bromine on (FREER and CLOVER), A., ii, 333.
- Pitches**, quantitative reactions to distinguish (HOLDE and MARCUSSEN), A., ii, 76.
- Pittakal** (LIEBERMANN), A., i, 384.
- Pituitary extract**, action of, on the kidney (MAGNUS and SCHÄFER), A., ii, 612.
- Plants**, estimation of cellulose in (HOFFMEISTER), A., ii, 205.  
 See also Agricultural Chemistry.
- Plaster of Paris** from the kilns, estimation of unburnt and overburnt gypsum in the (PÉRIN), A., ii, 129.
- Platinum**, recovery of, from platinum residues (BERTHOLD), A., ii, 557.  
 presence of, among the characters of a hieroglyphic inscription (BERTHELOT), A., ii, 318.  
 colloidal, catalytic action of, on gas cells (HÖBER), A., ii, 151.  
 catalysis of electrolytic gas by (ERNST), A., ii, 495.  
 catalytic action of, as affected by poisons (BREDIG and IKEDA), A., ii, 441; (RAUDNITZ), A., ii, 496; (BREDIG), A., ii, 596.  
 action of ammonia on, at high temperatures (BEILBY and HENDERSON), T., 1253; P., 1901, 190.
- Platinum alloy** on an Egyptian sheath (BERTHELOT), A., ii, 515.  
 with aluminium (BRUNCK), A., ii, 656.
- Platinum salts**, complex (MIOLATI and BELLUCCI), A., ii, 246.
- Platinum tetrachloride**, formation of (MALLER), A., ii, 454.
- Chloroplatinic acid**, action of chloroform and of mesityl oxide on (PRANDTL and HOFMANN), A., i, 13.  
 compounds of, with aldehydes and ketones (v. BAeyer and VILLIGER), A., i, 659.
- Platinum organic compounds**:—
- Platinum bases**, constitution of (WERNER and HERTZ), A., ii, 638.
- Platinum salts**, complex (VÉZES), A., i, 187; (MIOLATI and BELLUCCI), A., ii, 246.  
 compounds of, with pyridine and with ethylenediamine (JORGENSEN), A., i, 163.

- Platinum indium cyanide** (RENZ), A., ii, 657.
- Platinum**, estimation of, in platinum ores (LEIDIÉ and QUENNESSEN), A., ii, 695.
- Platinum metals**, method for the separation of the (LEIDIÉ), A., ii, 62.
- Pleonaste** from Unter-Lhota, Moravia (KOVÁK), A., ii, 606.
- Plaucococcus vulgaris* from the bark of lime trees (BRÄUTIGAM), A., i, 93.
- Plicatic acid** from lichens (HESSE), A., i, 149.
- Poison**, volatile, from the skin of *Iulus terrestris* (PHISALIX; BÉHAL and PHISALIX), A., ii, 69.
- Poisons**, inorganic, method for the destruction of organic matter applicable to the detection of (DENIGES), A., ii, 690.
- Poisoning**, recognition of barium compounds as the cause of (VITALI), A., ii, 39.
- by carbon monoxide, treatment of, by oxygen (GRÉHANT), A., ii, 409.
- by hydrocyanic acid, antidote for (HERTING), A., ii, 535.
- detection of phosphorus by the Blondlot-Dusart method in cases of (HALÁSZ), A., ii, 343.
- acid, in birds (MILROY), A., ii, 611.
- Poisonous effects** of alkali solutions (MOORE), A., ii, 68.
- Polarisation**. See Electrochemistry and Photochemistry.
- Polycystin** from *Polycystis flos aque* (ZOPF), A., i, 283.
- Polygonum tinctorium*, organic iron compounds in (SUZUKI), A., ii, 678.
- Polyhalite**, artificial preparation of (BASCH), A., ii, 168.
- Polyhaloid compounds**, abnormal behaviour of, with alcoholic potash (KONDAKOFF), A., i, 62, 305, 625.
- Polyiodides**, nature of, and their dissociation in aqueous solution (DAWSON), T., 238; P., 1900, 215.
- Polymerisation** of organic liquids (GUYE and BAUD), A., ii, 437, 543.
- Polysulphides**, organic (BLANKSMA), A., i, 264.
- Polyzonium rosalbum*, camphor excreted by (COOK), A., ii, 179.
- Porphyrexide**, constitution of, and mono- and di-chloro-, and their salts (PILOTY and SCHWERIN), A., i, 517, 583.
- Porphyrexine** and its salts (PILOTY and SCHWERIN), A., i, 517.
- Potassammonium**, action of, on certain metalloids (HUGOR), A., ii, 18.
- Potassium salts**, combination of, with ammonia in aqueous solution (DAWSON and McCRAE), T., 498; P., 1901, 6.
- toxic action of, on plants (COUPIN), A., ii, 122, 525.
- See also Agricultural Chemistry.
- Potassium copper antimonate** (DELA-CROIX), A., ii, 316.
- bromide, synthesis of; lecture experiment (ROSENFELD), A., ii, 547.
- carbonate, absorption of water vapour by (BUSNIKOFF), A., ii, 59.
- copper carbonate (GRÖGER), A., ii, 240.
- chlorate, the supposed mechanical facilitation of the decomposition of (SODEAU), T., 939; P., 1901, 149.
- chloride and nitrate, degree of dissociation in mixed solutions of (SACKUR), A., ii, 636.
- and magnesium chloride and sulphates, maximum vapour pressure of solutions of, at 25° (VAN'T HOFF and V. EULER-CHELPIN), A., ii, 249.
- influence of cane sugar on the conductivity of solutions of (MARTIN and MASSON), T., 707; P., 1901, 91.
- double salt of, with antimony pentachloride (WEINLAND and SCHLEGELMILCH), A., ii, 660.
- compound of, with uranyl chloride (ALOY), A., ii, 164.
- molybdenylchloride (NORDENSKJÖLD), A., ii, 454.
- hydroxide and its hydrates, thermal study of (DE FORCRAND), A., ii, 593.
- influence of cane sugar on the conductivity of solutions of (MARTIN and MASSON), T., 707; P., 1901, 91.
- reaction between chloroform and (SAUNDERS), A., ii, 13.
- iodide, double salts of, with mercuric iodide (PAWLOFF), A., ii, 101.
- triiodide, nature of (DAWSON), T., 238; P., 1900, 215.
- manganate, preparation of (KASSNER and KELLER), A., ii, 657.
- permanganate, preparation of, by means of ozone (FARBENFABRIKEN VORM. F. BAYER & Co.), A., ii, 658.
- action of heat on (RUDORF), A., ii, 388.
- action of, on alkali thiosulphates in neutral solutions (DOBBIN), A., ii, 311.

**Potassium** nitrate and chloride, degree of dissociation in mixed solutions of (SACKUR), A., ii, 636.

absorption of water vapour by (BUSNIKOFF), A., ii, 59.

compound of, with tetraethylidicacodylic acid (BIGINELLI), A., i, 21.

estimation of nitrogen in (BÖTTCHER), A., ii, 124; (v. WISELL), A., ii, 125.

See also Agricultural Chemistry.

aminochloro-osmate and its hydrochloride (BRIZARD), A., ii, 108; (WERNER and DINKLAGE), A., ii, 661.

nitrilopentachloro-osmate (WERNER and DINKLAGE), A., ii, 661.

telluriphosphates (WEINLAND and PRAUSE), A., ii, 600.

perselenate (DENNIS and BROWN), A., ii, 501.

sulphate, transport numbers for (NOYES), A., ii, 144.

double salt with plumbic sulphate (ELBS and FISCHER), A., ii, 100.

magnesium hydrogen sulphate  $\text{KHMg}(\text{SO}_4)_2 + 2\text{H}_2\text{O}$  (MEYERHOFER and COTTRELL), A., ii, 552.

rhodium alum (PICCINI and MARINO), A., ii, 392.

persulphate, action of anhydrous sulphuric acid on (BACH), A., ii, 447.

imidosulphite (DIVERS and OGAWA), T., 1101; P., 1901, 164.

and potassium sodium nitrilosulphates (DIVERS and HAGA), T., 1096; P., 1901, 164.

**Potassium organic compounds:**—

ammonium cyanide (HEITING), A., ii, 535.

ferricyanide, influence of light on the decomposition of (MATUSCHEK), A., i, 455, 584, 636, 677.

action of carbon dioxide on aqueous solutions of (MATUSCHEK), A., i, 677.

action of hydrofluosilicic acid on (MATUSCHEK), A., i, 454.

action of sulphur dioxide on aqueous solutions of (MATUSCHEK), A., i, 635.

ferrocyanide, action of sunlight on (MATUSCHEK), A., i, 635, 636.

action of carbon dioxide on aqueous solutions of (MATUSCHEK), A., i, 677.

action of hydrofluosilicic acid on (MATUSCHEK), A., i, 262.

action of sodium sulphide on (BERTHELOT), A., i, 20.

**Potassium organic compounds:**—

ferrocyanide, action of sulphur dioxide on aqueous solutions of (MATUSCHEK), A., i, 635.

barium platoso-oxalonitrite (VEZES), A., i, 187.

aryl sulphates (VERLEY), A., i, 143.

thiocyanate in nasal and conjunctival secretion (MUCK), A., ii, 117.

variation of the quantity of, in human saliva (GROBER), A., ii, 402; (SCHNEIDER), A., ii, 459.

action of heat on (GILES), A., i, 262.

as indicator in the reduction of ferric salts (EBELING), A., ii, 424; (VOLHARD), A., ii, 580; (DE KONINCK), A., ii, 694.

**Potassium, estimation of:**—

detection of, by sodium picrate (REICHARD), A., ii, 577.

estimation of (SCHUMM), A., ii, 578.

estimation of, by perchloric acid (MONTANARI), A., ii, 195.

estimation of, in soil (RÜMLER), A., ii, 196.

**Potatoes**, estimation of starch in (BAUMERT, BODE, and FEST), A., ii, 44; (BEHREND and WOLFS), A., ii, 536.

See also Agricultural Chemistry.

**Potential.** See Electrochemistry.

**Pottery manufacture**, solubility of lead silicates in (THORPE and SIMMONDS), T., 791; P., 1901, 113.

**Powder**, smokeless, estimation of soluble nitrocellulose in (QUINAN), A., ii, 480.

**Pozzuolana**, artificial (REBUFFAT), A., ii, 18.

mortar, action of sea water on (REBUFFAT), A., ii, 18.

**Praseodymium** (v. SCHÉELE), A., ii, 387.

atomic weight of (BRAUNER), P., 1901, 65.

spectrum of (BAUR and MARC), A., ii, 634.

**Praseodymium nitride** (MATIGNON), A., ii, 61.

tetroxide and peroxide (BRAUNER), P., 1901, 66.

**Precipitates**, method for determining the weight of, without separating it from the liquid (THATCHER), A., ii, 685.

**Pregnancy**, anæmia during (CHARRIN and GUILLEMONAT), A., ii, 611.

passage of carbon monoxide from mother to fœtus during (NICLOUX), A., ii, 608.

**Pressure**, influence of, on chlorophyllous assimilation (FRIEDEL), A., ii, 267.

**Propaldehyde**, condensation of, with benzaldehyde (HACKHOFER), A., i, 277.

- Propaldehyde**, condensation of, with isobutaldehyde (KOHN), A., i, 255.  
condensation of, with formaldehyde (KOCH and ZERNER), A., i, 633.  
diethyl acetal,  $\beta$ -amino-, acyl, benzyl, and benzylidene derivatives of (WOHL and WOHLBERG), A., i, 514.  
carbamide and phenylthiocarbamide of (WOHL and WOHLBERG), A., i, 513.  
 $\beta$ -cyano- (WOHL and SCHÄFER), A., i, 514.
- Propaldehyde**,  $\beta$ -amino-, oxalate of (WOHL and WOHLBERG), A., i, 513.  
 $\alpha\beta$ -trinitro- (TORREY and BLACK), A., i, 12.
- Propane**,  $\alpha\gamma$ -diamino-, synthesis of, from glutaric acid (CURTIUS and CLEMM), A., i, 68.  
 $\alpha\beta\gamma$ -triamino-, synthesis of, from tricarballic acid, and its tribenzoyl derivative and salts (CURTIUS and HESSE), A., i, 71.  
dinitro- (PONZIO), A., i, 452.
- cycloPropane**. See Trimethylene.
- Propanedicarboxylic acids**. See:—  
Ethylmalonic acid.  
Glutaric acid.  
Methylsuccinic acid.
- $\alpha$ -Propanol,  $\beta$ -amino-, and *iso*Propanolamine. See *iso*Propyl alcohol,  $\beta$ -amino-.
- $p$ - $\psi$ -Propenylanisole (BÉHAL and TIFFE-NEAU), A., i, 272.
- Propenylcatechol** ethoxymethyl ether (POMERANZ), A., i, 699.
- Propenylphenols**, isomeric, colour reaction to distinguish (CHAPMAN), A., ii, 76.
- iso*Propenylphenylhydantoin (BOUVEAULT and WAHL), A., i, 114.
- Propiobistetric acid** (WOLFF and GABLER), A., i, 285.
- Propionic acid**,  $\alpha\beta$ -diamino- (TAFEL), A., i, 427.  
 $\alpha$ -bromo-, optically active forms of (RAMBERG), A., i, 63.  
 $\beta$ -chloro-, amyl ester (HAMONET), A., i, 187.  
 $\alpha\beta\beta$ -trinitro-, its anil, aniline,  $p$ -tolil,  $p$ -toluidine and metallic salts, and methylimide (TORREY and BLACK), A., i, 12.
- Propionylacetic acid**, ethyl ester (BLAISE), A., i, 363.
- Propionylacetoneitrile** (VAN REYMENANT), A., i, 127.
- Propionylanilide**,  $\alpha$ -cyano- (HALLER and BLANC), A., i, 261.
- Propionylcarbinol** (VAN REYMENANT), A., i, 126.
- $\omega$ -**Propionyl-2:4-** and **2:5-diethoxyacetophenone** (v. KOSTANECKI and TAMBOR), A., i, 558.
- Propionylformic acid**, its phenylhydrazine, oxime, and ethyl ester (VAN DER SLEEN), A., i, 500.
- Propionylisopropylacetic acid**, ethyl ester (BLAISE), A., i, 252.
- 6-Propionylresorcinol** mono- and diethyl ethers (v. KOSTANECKI and LLOYD), A., i, 735.
- Propiophenone**, selenium derivative of (KUNCKELL and ZIMMERMANN), A., i, 215.
- n*-**Propyl alcohol**, influence of, as solvent, on the rotation of ethyl tartrate (PATTERSON), T., 176; P., 1900, 176.
- n*-**Propyl alcohol**,  $\gamma$ -amino- (HENRY), A., i, 68.
- iso***Propyl alcohol**,  $\beta$ -amino- ( $\beta$ -amino- $\alpha$ -propanol; *isopropanolamine*) (HENRY), A., i, 16, 68.  
and its dibenzoate, picrate and platinichloride (PEETERS), A., i, 259.  
and its platinichloride (STRAUSS), A., i, 17.
- Propyl-acetaldoxime** and *-isoacetaldoxime*, and the hydrolysis and reduction of the *iso*-compound (DUNSTAN and GOULDING), T., 637; P., 1901, 84.
- Propylacetonedicarboxylic acid**, cyano-, ethyl ester (DERÔME), A., i, 313.
- Propyl-acetoxime** and *-isoacetoxime* and the hydrolysis and reduction of the *iso*-compound (DUNSTAN and GOULDING), T., 634; P., 1901, 84.
- $\beta$ -*iso*Propyl- $\gamma$ -acetylbutyric acid (CROSSLEY), P., 1901, 172.
- $\alpha$ -**Propyladipic acid** (*heptanedicarboxylic acid*), preparation and dissociation constants of (MELLOU), T., 131; P., 1900, 215.
- iso*Propyl *isocamyl ketone* and its semicarbazone (BLAISE), A., i, 253.
- n*-**Propylanhydracetonebenzils**,  $\alpha$ - and  $\beta$ - (JAPP and MELDRUM), T., 1040; P., 1901, 176.
- n*-**Propylantranilic acid** (MEYER), A., i, 191.
- n*-**Propylbenzene**, preparation of (BODROUX), A., i, 196.
- $\alpha$ -**Propylbutanetricarboxylic acid**, ethyl ester (MELLOR), T., 131; P., 1900, 215.
- $\alpha$ -*iso*Propyl- $\beta$ -*isobutylhydracrylic acid*, synthesis and properties of, and its ethyl ester, salts, and lactone (PROPOPOFF and REFORMATSKY), A., i, 447.

- l-Propylconiine** and its salts (HOHENEMSER and WOLFFENSTEIN), A., i, 606.
- Propyldiallylcarbinol**, pentahydric alcohol from (MARKO), A., i, 251.
- Propyldihydroisoindole**, 2- $\gamma$ -bromo-, and its hydrobromide and picrate (FRÄNKEL), A., i, 45.
- Propylene**, preparation of (NEWTH), T., 917; P., 1901, 147.  
 $\alpha$ -chlorohydrin. See  $\alpha$ -Chlorohydrin.  
 glycol, oxidation of, by *Mycoderma aceti* (KLING), A., i, 625.  
 mercuric iodide and its dibenzoyl derivative (SAND), A., i, 458.  
 nitrosite (DEMFANOFF), A., i, 493.
- Propylenedicarboxylic acids**. See:—  
 Citraconic acid.  
 Glutaconic acid.  
 Mesaconic acid.
- $\alpha$ -Propylglutaric acid** (*hexanedicarboxylic acid*), preparation and dissociation constants of (MELLOR), T., 129; P., 1900, 215.
- $\alpha$ -isoPropylglutaric acid** (*hexanedicarboxylic acid*), dissociation constants of (MELLOR), T., 129.
- Propylcyclohexane** (*propylhexamethylene*) (SABATIER and SENDERENS), A., i, 459; (KURSANOFF), A., i, 493.  
 synthesis of (SABATIER and SENDERENS), A., i, 263.
- isoPropylideneacetone**. See Mesityl oxide.
- Propylideneaniline** sodium hydrogen sulphite, and **Propyldenedianiline** hydrogen sulphite (EIBNER), A., i, 377.
- isoPropylidenebistetronic acid** and its dibromide and dibenzoyl derivative (WOLFF and SCHIMPF), A., i, 284.
- $\beta$ -Propylidenefluorylhydrazine** (DIELS), A., i, 522.
- Propylidenehydrazone** cyanohydrin, compound of, with benzaldehyde (EIBNER and SENF), A., i, 166.
- isoPropylidenecyclopentene** (*dimethylfulvene*) diperoxide (ENGLER and FRANKENSTEIN), A., i, 658.
- Propylidenephénylglycolohydrazide** (CURTIUS and MÜLLER), A., i, 779.
- 2-n- and -iso-Propyl-4-ketodihydroquinazolines** (GOTTHELF), A., i, 764.
- Propylmalonic acid** (*butanedicarboxylic acid*), cyano-, ethyl ester (MELLOR), T., 130; P., 1900, 215; (HALLER and BLANC), A., i, 261.
- Propyl- $\psi$ -nitrole** (SCHÖFER), A., i, 495.
- p-Propyloxyphenyl-carbamide** and -thiocarbamide (SPIEGEL and SABBATH), A., i, 534.
- p-isoPropylphenyl-acetylene** and -chloro-acetylene (KUNCKELL and KORITZKY), A., i, 75.
- isoPropylphthalide** (GUCCI), A., i, 544.
- isoPropylpiperidiniumbromoacetic acid**, ethyl ester (WEDEKIND), A., i, 640.
- $\alpha$ -Propylpropanetricarboxylic acid**, ethyl ester (MELLOR), T., 129.
- Propyl isoPropyl ketone** and its semicarbazone (BLAISE), A., i, 253.
- 3-Propyl-5-pyrazolone** (BONGERT), A., i, 654.
- 3-Propylpyrazolone-1-carboxylamide** (BLAISE), A., i, 363.
- isoPropyl- $\alpha$ -stilbazole** and - $\alpha$ -stilbazoline and their salts (BACKE), A., i, 562.
- p-isoPropylstyrene**,  $\alpha\beta$ -dichloro- (KUNCKELL and KORITZKY), A., i, 75.
- Propylthiocarbimide**,  $\beta$ -chloro- $\beta\gamma$ -dibromo- and the action of aniline and benzylamine on (DIXON), T., 560; P., 1901, 50.
- o-isoPropyltoluene**. See o-Methylisopropylbenzene.
- Protamine** from *Accipenser stellatus* (KURAEFF), A., ii, 462.
- Protamines**, composition of (KOSSEL and KUTSCHER), A., i, 107.
- Protease** of *Aspergillus niger* (MALFITANO), A., i, 58.
- Proteid decomposition**, cause of the increase of, during inanition (KAUFMANN), A., ii, 254; (VOIT), A., ii, 459; (SCHULZ), A., ii, 562.  
 increase of, by protoplasmic poisons (ROSTOSKI), A., ii, 261.
- Proteid digestion**, theory of (SAWJALOFF), A., ii, 403.
- Proteids** (BANG; KOSSEL; JOLLES), A., i, 490.  
 formation of, in plants (ZALESKI), A., ii, 619.  
 production of, in plants in absence of light (IWANOFF; SCHULZE), A., ii, 184.  
 influence of carbohydrates on the production of, in plants (SCHULZE), A., ii, 333.  
 conditions of the production of, in plants (MAYER), A., ii, 526.  
 reproduction of, from the products of their decomposition (SCHULZE), A., ii, 184.  
 synthesis of (PALLADIN), A., ii, 333.  
 composition of (KOSSEL and KUTSCHER), A., i, 107; (DENNSTEDT), A., i, 780; (HART), A., i, 783.  
 constitution and decomposition products of (HABERMANN and EHRENFELD), A., i, 57.  
 influence of temperature on the energy of the decomposition of, in germination (PRIANISCHNIKOFF), A., ii, 120.  
 decomposition products of (KUTSCHER), A., i, 107.



**Proteids**, cystin and cystein in the decomposition products of (EMBDEN), A., i, 491.  
 physical properties of (POSTERNAK), A., ii, 648.  
 basic nature of (OSBORNE), A., i, 781.  
 action of pepsin and trypsin on (LAWROFF; DZIERZGOWSKI and SALASKIN), A., ii, 666; (MOCHIZUKI), A., ii, 667.  
 oxidation of (JOLLES), A., i, 490; (SCHULZ), A., i, 780.  
 estimation of the amounts of oxygen absorbed by, when exposed to the air (NENCKI and ZALESKI), A., ii, 688.  
 value of, in nutrition (LICHTENFELT), A., ii, 609.  
 antidotes for chemically pure (IDE), A., ii, 464.  
 compounds of, with aldehydes (SCHWARZ), A., i, 297.  
 combination of, with fat (NERKING), A., i, 491.  
 compounds of, with hydrogen chloride (ERB), A., i, 621.  
 sugar formation after feeding on (BENDIX), A., ii, 258, 563.  
 of horse-serum, the ammonium sulphate method of separating the (BLOXAM), A., ii, 404.  
 of green leaves (WINTERSTEIN), A., ii, 619.  
 of milk, comparison of the reagents for, with Kjeldahl's method for nitrogen estimations (VIVIAN), A., ii, 363.  
 of invertebrate muscle (v. FÜRTH), A., ii, 117.  
 of seeds (BOKORNY), A., ii, 415.  
 of the thymus gland (PEKELHARING and HUISKAMP), A., i, 175; (HUISKAMP), A., ii, 461.  
 of unstriped muscle (VINCENT and LEWIS), A., ii, 255.  
 bromination and iodination numbers of (VAUBEL), A., ii, 709.  
 Adamkiewicz's reaction for (HOPKINS and COLE), A., i, 310.  
 precipitation of, by chloroform (SALKOWSKI), A., i, 241; (KRÜGER), A., i, 621.  
 precipitation of, by anhydrous sodium sulphate (PINKUS), A., i, 779.  
 estimation of, in fodder (SCHJERNING), A., ii, 79.  
 methods of estimating the nitrogen of, in vegetable matter (FRAPS and BIZZELL), A., ii, 140.

**Proteids.** See also:—

Albumin.  
 Albumoses.

**Proteids.** See:—

Amphopeptone.  
 Antipeptone.  
 Bos-osteoplasme.  
 Casein.  
 Cystein.  
 Cystin.  
 Edestan.  
 Edestin.  
 Egg-albumin.  
 Fibrin.  
 Fibroin.  
 Gelatin.  
 Globulins.  
 Gluco-proteid.  
 Hæmatin.  
 Hæmocyanin.  
 Hæmoglobins.  
 Histon.  
 Ichthulin.  
 Lactomucin.  
 Lecithin.  
 Melanin.  
 Melanoidin.  
 Mucosalbumin.  
 Nucleins.  
 Nucleo-histon.  
 Nucleo-proteids.  
 Osseo-mucoid.  
 Ovalbumin.  
 Peptone.  
 Protoplasmides.  
 Robin.  
 Serum-albumin.  
 Serum-globulin.  
 Spongio-melanoidin.  
 Syntonins.  
 Thymine.  
 Thyreo-globulin.  
 Vitellin.

**Proteinochrome** (KLUG), A., i, 623.

**Protocatechuic acid**, (3:4-dihydroxybenzoic acid), acidimetric estimation of (IMBERT), A., ii, 45.

2:5- and 5:6-dichloro-, and their methyl esters (MAZZARA), A., i, 720.

**Protopine** and its salts (SCHMIDT), A., i, 742; (FISCHER), A., i, 743; (WINTGEN), A., i, 744.

**Protoplasmide** in tissue (ÉTARD), A., ii, 563.

**Protoplasmides**, breaking down of (ÉTARD), A., i, 490.

**Protoplasm**, sensitiveness of, and its relation to enzymes (BOKORNY), A., i, 177, 435; (KONING), A., i, 177.

**Prussian blue**, rapid method for the estimation of, in spent oxide (POPPELWELL), A., ii, 352.

estimation of, in spent gas purifying material (NAUSS), A., ii, 43.

- Pseudaconitine**, physiological action of (CASH and DUNSTAN), A., ii, 613.
- Pseudo-acid** from agaric (ADRIAN and TRILLAT), A., i, 211.
- Pseudo-solutions**, size of the particles in (DE BRUYN), A., ii, 90.
- Psylla wax**, **Psyllostearyl alcohol**, and **Psyllostearic acid** and its benzoate (SUNDWICK), A., i, 358.
- Ptyalin**, amylolytic action of (MASZEWSKI), A., i, 178; (BIELFELD; KRÜGER), A., ii, 561.
- Ptyalin activity** (MASZEWSKI), A., i, 178.
- Pulegone**, oxidation of (BOUVEAULT and TETRY), A., i, 364.
- Purgic acid** (KROMER), A., i, 629.
- Purine**, 5-amino-, and its salts (TAFEL and ACH), A., i, 426.
- Purine derivatives**, diuretic action of (ACH), A., ii, 31.  
pharmacological action of some (SCHMIEDEBERG), A., ii, 674.  
influence of caffeine and theobromine on the excretion of, in the urine (KRÜGER and SCHMID), A., ii, 463.
- Purone** and **isopurone** and the action of acetic anhydride on (TAFEL), A., i, 236.
- Pus**, an oxidising ferment in (VITALI), A., ii, 672.  
dropsical, albumins in (MALMÉJAC), A., ii, 566.
- Pyocyanase**, nutrition of (LOEW and KOZAI), A., ii, 675.
- Pyraconitine**, physiological action of, in relation to its constitution (CASH and DUNSTAN), A., ii, 612.
- Pyranthin**. See *p*-Ethoxyphenylsuccinimide.
- Pyrazole**,  $C_4H_4O_4N_2$ , from the action of phenylhydrazine on ethyl formylglutamate (WISLICENUS and BINDEMANN), A., i, 361.
- Pyrazole- and Pyrazoline-3:4:5-tricarboxylic acids** (BUCHNER and V. D. HEIDE), A., i, 232.
- Pyrazoline-3-carboxylic acid**, methyl ester (V. PECHMANN and BURKARD), A., i, 167.
- Pyrazolone-3-carboxylic acid** (FENTON and JONES), T., 94; P., 1900, 205.
- Pyridine**, action of monohaloid aliphatic acids on (SIMON and DUBREUIL), A., i, 290.  
action of benzyl chloride and iodide on (TSCHITSCHIBABIN), A., i, 484.  
action of, on diacetyl tartaric anhydride (WOHL and OESTERLIN), A., i, 365.  
use of, for molecular weight determinations by the ebullioscopic method (INNES), T., 261; P., 1900, 223.
- Pyridine**, compounds of, with carbonyl chloride, methyl chlorocarbonate and salol chlorocarbonate (FARBEN-FABRIKEN VORM. F. BAYER & Co.), A., i, 662.  
compounds of, with chloro- and bromo-anil (IMBERT), A., i, 651.  
compounds of, with chloromethyl ether (LITTERSCHEID), A., i, 443.  
compounds of, with metallic salts (TOMBECK), A., i, 164, 267.  
compounds of, with platinum salts (JÖRGENSEN), A., i, 163.  
compounds of, with titanium bromide and chlorides (ROSENHEIM and SCHÜTTE), A., ii, 244.  
compound of, with water (BREDIG), A., i, 608.  
derivatives, synthesis of (GUARESCHI), A., i, 341.  
benzyl iodide (TSCHITSCHIBABIN), A., i, 484.  
bismuth salts (MONTEMARTINI), A., i, 163; (VANINO and HAUSER), A., i, 289.  
*pentachlorochromate*, constitution of (PFEIFFER), A., ii, 659.  
hydrochloride, compound of, with trichlorotriaquochromium (PFEIFFER), A., ii, 659.
- Pyridine**, chlorine derivatives of (SELL and DOOTSON), T., 899; P., 1901, 131.
- Pyridine bases**, chloro-derivatives of (CHEMISCHE FABRIK VON HEYDEN), A., i, 748.
- Pyridine-3-carboxylic acid**. See Nicotinic acid.
- Pyridine-4-carboxylic acid**. See *iso*Nicotinic acid.
- Pyridine-2:3-dicarboxylic acid**. See Quinolinic acid.
- Pyridine-3:4-dicarboxylic acid**. See Cinchoneric acid.
- Pyridine series**, determination of the dielectric constants of substances of the (LADENBURG), A., ii, 634.
- Pyridine-2:3:4-tricarboxylic acid**, and its methyl and ethyl esters (MEYER), A., i, 750.
- $\beta$ -Pyridiniummalic acids** (*pyridine-aminosuccinic acids*), *d*-, *l*-, and *i*-, and their salts (LUTZ), A., i, 8.
- Pyridone**, cyano-, derivatives, physiological action of (DERIV), A., ii, 328.
- Pyridones**, constitution of (DECKER), A., i, 96.
- Pyridylchlorodihydroxyquinone** and its benzoyl and ethyl salts (IMBERT), A., i, 652.
- Pyridyldichlorohydroxyquinone** and the action of potash on (IMBERT), A., i, 651, 652.

**Pyridoxazinone-*p*-benzoic acid** (FULDA), A., i, 226.

**Pyrimidine** and 2:4:6-trichloro- (GABRIEL), A., i, 168.

**Pyrimidine compounds**, physiological action of (STEUDEL), A., ii, 409.

**Pyrites** from Roumania (BUTZUREANU), A., ii, 662.

alteration of, by underground water (EVANS), A., ii, 167.

estimation of copper in (HEIDENREICH), A., ii, 197.

estimation of gold and silver in (BUDDÉUS; LOEVY), A., ii, 133.

estimation of sulphur in (PELLET), A., ii, 622.

**Pyrogalloldisulphonic acid** and its barium and calcium salts (DELAGE), A., i, 274, 643.

**Pyrogallolsulphonic acid** and its salts (DELAGE), A., i, 643.

**Pyromellitic acid** (VERNEUIL), A., i, 546.

**Pyromucic acid** and **Pyromucyl chloride**, preparation of (FRANKLAND and ASTON), T., 515; P., 1901, 41.

**Pyromucic acid** and *iso*Pyromucic acid and their salts and derivatives (CHAVANNE), A., i, 649.

**Pyromucic anhydride** (BAUM), A., i, 735.

**Pyromucylhydroxamic acid** and its benzoyl derivative (PICKARD and NEVILLE), T., 847; P., 1901, 127.

**$\alpha$ -Pyrone- $\alpha$ -carboxylic acid**. See Coumalin-6-carboxylic acid.

**Pyrosmalite** from Nordmark, Sweden (ZAMBONINI), A., ii, 607.

**Pyrotartaric acid**. See Methylsuccinic acid.

***n*-Pyrotartaric acid**. See Glutaric acid.

**Pyroxene**, rhombic, from South Africa (BOWMAN), A., ii, 168.

sodiferous, from Oropa, Biellesi (ZAMBONINI), A., ii, 398.

**Pyrrrole**, diiododinitro- and triiodonitro- (COUSIN), A., i, 347.

**Pyrrroles**, occurrence of intermediate products in the synthesis of, from 1:4-diketones (KNORR and RABE), A., i, 163.

3-nitroso- (ANGELICO and CALVELLO), A., i, 747.

**Pyrrrole ring**, a characteristic fission of the (DUDEN and HEYNSIUS), A., i, 747.

**Pyrrrolidine-2-carboxylic acid** from egg-albumin and gelatin (FISCHER), A., i, 745.

***l*-Pyrrrolidine-2-carboxylic acid** and its phenylcarbimide and anhydride (FISCHER), A., i, 781.

**Pyrrrolidines**, amino- (PAULY and SCHAUM), A., i, 607.

**Pyruvic acid**, preparation of, action of ammonium carbonate on, and estimation of (DE JONG), A., i, 130.

action of heat on (WOLFF and HEROLD), A., i, 499.

condensation of, with benzaldehyde (ERLENMEYER), A., i, 390.

action of hydrochloric acid on, and its sodium sulphite compound (DE JONG), A., i, 446.

hydrazone of (FENTON and JONES), T., 91; P., 1900, 205; 1901, 24.

nitrotyllylhydrazone and its ethyl ester (POPE and HIRD), T., 1142; P., 1901, 186.

phenylhydrazide, nitroso-, tautomeric form of, and phenylhydrazone and *p*-nitrophenylhydrazone derivatives of (BAMBERGER and GROB), A., i, 292.

**Pyruvic acid**, ethyl ester, phenyl hydrazones of, isomeric (SIMON), A., i, 49.

menthyl ester (COHEN and WHITELEY), T., 1309; P., 1900, 213.

**Pyruvic acid-*β*-*o*-, -*m*-, and -*p*-phenylbenziminooazolehydrazone** (MIKLASZEWSKI and V. NIEMENTOWSKI), A., i, 762.

## Q.

**Quartz** from the Simplan Tunnel (SPEZIA), A., ii, 393.

solubility of, in solutions of borax (SPEZIA), A., ii, 605.

smoky, colour of (V. KRAATZ-KOSCHLAU and WÖHLER), A., ii, 166; (KOENIGSBERGER), A., ii, 167.

**Quercitrin**, sugar of (VOTOČEK and FRIČ), A., i, 161.

*Quillaria sneegmadernos*, presence of sucrose in (MEILLERE), A., ii, 185.

**Quinaldine**. See 2-Methylquinoline.

**Quinhydrone**, formation and constitution of (VALEUR), A., i, 155.

**Quinic acid**, occurrence of (v. LIPPMANN), A., i, 389.

**Quinine alkyl** and chloro-carbonates (VEREINIGTE CHININFABRIKEN ZIMMER & Co.), A., i, 738, 739.

dibromide hydrobromide perbromide and its mercury salt, and dibromide and dibromoherapathite (CHRISTENSEN), A., i, 481.

glycerophosphate, analysis of (PRUNIER), A., ii, 51.

"saccharinate," basic (DÉFOURNEL), A., i, 482.

**Quinitol**, hydrocarbon, C<sub>12</sub>H<sub>16</sub>, from (WILLSTÄTTER and LESSING), A., i, 265.

- o*-Quinocatechol ether**, *hexabromo-* (JACKSON and KOCH), A., i, 597.
- Quinol**, preparation of (KEMPF), A., i, 728.
- diphenyl ether and its *p*-amino- and *p*-nitro-derivatives (HAEUSSERMANN and MÜLLER), A., i, 382.
- Quinol**, chloro-derivatives, thermochemistry of (VALEUR), A., i, 154.
- 2:3-*dicyano-* (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 699.
- Quinols**, relation between the constitution of, and their tendency to form quinones (KEHRMANN), A., i, 29.
- $\psi$ -Quinols** (ZINCKE), A., i, 204.
- and imino-, formation of (BAMBERGER), A., i, 140, 203.
- Quinoline**, action of monohaloid aliphatic acids on (SIMON and DUBREUIL), A., i, 290.
- compound of, with  $\alpha$ -chlorohydrin, and base from (BIENENTHAL), A., i, 129.
- bismuth salts (VANINO and HAUSER), A., i, 289.
- bismuth chloride (SCHIFF), A., i, 375.
- titanichloride (ROSENHEIM and SCHÜTTE), A., ii, 245.
- Quinoline**, 2-bromo-, nitro-derivatives of (DECKER), A., i, 654.
- tri*iodo-, and its salts, and *di*- and *tri*-iodonitro- (EDINGER and SCHUMACHER), A., i, 46.
- 5-nitro-, and its hydrochloride and ethiodide (DECKER), A., i, 611.
- 7-nitro-, ethiodide (DECKER), A., i, 654.
- iso*Quinoline, *di*- and *tri*-iodo-, and their salts (EDINGER and SCHUMACHER), A., i, 46.
- $\beta$ -Quinolinebenzimidazoles**, and their salts (MIKLASZEWSKI and V. NIE-MENTOWSKI), A., i, 762.
- Quinolinic acid** (*pyridine-2:3-dicarboxylic acid*), derivatives of (KIRPAL), A., i, 227.
- methylbetaine and methochloride of, and esters and amide of the betaine (KIRPAL), A., i, 564.
- its esters, and its 2-methyl and 2-ethyl esters and 3-chloride, and their salts (MEYER), A., i, 750.
- Quinoliniumiodoacetic acid**, methyl ester (WEDEKIND), A., i, 640.
- 2-Quinolone-4-acetic acid** and its ethyl ester (BESTHORN and GARBEN), A., i, 79.
- 7-amino-, and its ethyl ester (BESTHORN and GARBEN), A., i, 97.
- Quinolones**, constitution of (DECKER), A., i, 96.
- Quinolynlenphenylene ketone** and its oxime and phenylhydrazones (NÖLTING and BLUM), A., i, 728.
- Quinolynlenphenylenemethane** (NÖLTING and BLUM), A., i, 728.
- Quinone**, preparation of (KEMPF), A., i, 728.
- action of ethyl mercaptan on (TARBOURIECH), A., i, 329.
- action of nitrous acid on (SCHMIDT), A., i, 88.
- Quinone**, chloro-derivatives, thermochemistry of (VALEUR), A., i, 154.
- o*-Quinone**, derivatives of (JACKSON and KOCH), A., i, 597.
- Quinones**, estimation of, quantitatively (VALEUR), A., i, 155.
- Quinones**, list of. See Ketones and Quinones.
- Quinonebenzoyl- $\alpha$ -naphthylhydrazone** (MCIPHERSON and GORE), A., i, 572.
- Quinonediphenylimide**, amino- (BÖRNSTEIN), A., i, 375.
- Quinoneoxime**. See Phenol, 4-nitroso-.
- Quinophthalines**, isomeric, and their salts and bromo-derivatives (EIBNER and LANGE), A., i, 349.
- Quinophthalone**, preparation, constitution and bromo- and nitro-derivatives of (EIBNER and LANGE), A., i, 348.
- Quinophthaloneanil** (EIBNER and LANGE), A., i, 349.
- Quinotoxine**, action of *p*-bromophenylhydrazine on, and its nitroso-derivatives and their salts (v. MILLER and ROHDE), A., i, 95.
- Quinoxaline-2:3-diacetic acid**, ethyl ester, and its sodium salt (THOMAS-MAMERT and STRIEBEL), A., i, 614.

## R.

- Rabbits**, action of anæsthetics on (WRIGHT), A., ii, 180.
- Racemic acid**. See under Tartaric acid.
- Racemisation** (MINGUIN and DE BOLLE-MONT), A., ii, 497.
- of  $\alpha$ -bromocamphor (KIPPING), T., 370; P., 1901, 32.
- Radio-activity**. See Photochemistry.
- Radium**, gases made active by (CURIE and DEBIERNE), A., ii, 298.
- physiological action of rays from (GIESEL), A., ii, 99.
- Radium salts**, radio-activity induced by (BEQUEREL), A., ii, 215; (CURIE and DEBIERNE), A., ii, 216, 589.
- "*Radix Naregamia*," composition of (HAUKE), A., ii, 70.
- Radix Rhapontici*, glucosides in (AWENG), A., i, 39.

- Raffinose** (*melitose*; *melitriose*), inversion of, by an enzyme from *Penicillium glaucum* (GILLOR), A., ii, 121.
- Rate of reactions.** See Affinity.
- Rays.** See Photochemistry.
- Realgar.** See Arsenic sulphide.
- Red rain.** See under Water.
- Reflux apparatus** (CAZENEUVE), A., ii, 379.
- Refraction.** See Photochemistry.
- Rennet**, curdling of milk by (DE VRIES and BOEKHOUT), A., ii, 258.
- Bennet-ferment**, estimation of, in gastric juice (MEUNIER), A., ii, 115.
- Rennin** and diastase in pancreatic extracts (VERNON), A., ii, 710.
- Resins**, natural (BAMBERGER and VISCHNER), A., i, 220.
- formation of, in several Abietes (TSCHIRCH and FABER), A., i, 601.
- of elder tree bark (MALMÉJAC), A., ii, 572.
- of Natal aloes (TSCHIRCH and KLAVENESS), A., i, 399.
- of *Pinus Pinaster* (TSCHIRCH and BRUNING), A., i, 220.
- of *Pinus sylvestris* (TSCHIRCH and NIEDERSTADT), A., i, 397.
- sandarac, constituents of (HENRY), T., 1144; P., 1901, 187.
- See also Copals.
- Resins.** See also :—
- Bordoresen.
- Juroresen.
- Karabin.
- Kauroresen.
- Nataloresinotannol.
- Silvoresen.
- Resorcinol**, heat of solution of, in ethyl alcohol (SPEYERS and ROSELI), A., ii, 147.
- transformation of, into amines (BADISCHE ANILIN- and SODA-FABRIK), A., i, 696.
- diphenyl ether, *dinitro*- (JACKSON and COHOE), A., i, 585.
- ethyl ether, *bromodinitro*- (JACKSON and EARLE), A., i, 586.
- Resorcinol-mono- and -di-carbodiethyl-amides** (EINHORN and ESCALES), A., i, 653.
- Resorcinolcarbohydrazide** (EINHORN and ESCALES), A., i, 653.
- Resorcylmaleic acid.** See  $\beta$ -2.4-Di-hydroxyphenylmaleic acid.
- Resorption** of one solution by another (OKER-BLOM), A., ii, 543.
- Respiration** in Annelids (BOUNHIOL), A., ii, 517.
- of the marmot (PEMBREY), A., ii, 608.
- of plants. See {Agricultural Chemistry.
- Respiratory** exchange in tuberculosis (ROBIN and BINEF), A., ii, 327.
- quotient in geese (BLEIBTREV), A., ii, 457.
- Retenequinone**, action of phenylhydrazine on (BAMBERGER and GROB), A., i, 280.
- Reversibility**, some conditions of (COLSON), A., ii, 238.
- Rhamnazin** and **Rhamnetin** (PERKIN and ALLISON), P., 1900, 181.
- Rhamnose** from quercitrin and xanthorhamnin (VOTOČEK and FRÍČ), A., i, 161.
- Rhodesose** and its derivatives (VOTOČEK), A., i, 368.
- Rhodium alums** (PICCINI and MARINO), A., ii, 392.
- Rhodium**, estimation and separation of, in platinum ores (LEIDIÉ), A., ii, 62; (LEIDIÉ and QUENNESSEN), A., ii, 695.
- separation of, from iridium (PICCINI and MARINO), A., ii, 392.
- Rhodizonic acid**, energy of (COFFETTI), A., i, 29.
- Rhodochrosite** from Roumania (PONI), A., ii, 26.
- Rhododendrin** and **Rhododendrol** (ARCHANGELSKI), A., i, 734.
- Rhubarb**, chemistry of (HUNKEL), A., ii, 268.
- glucosides in (AWENG), A., i, 39.
- Ricin immunity** (JACOBY), A., ii, 673.
- Ricinus meal.** See Agricultural Chemistry.
- Rigor** in frog's muscles (STEVENS), A., ii, 519.
- Ring compounds**, luminescence of (KAUFFMANN), A., i, 318.
- of four carbon atoms, formation of (MICHAEL), A., i, 123.
- containing sulphur (AUTENRIETH and HENNINGS), A., i, 560.
- Ring formation**, influence of the methyl group on (GILBODY and SPRANKLING), P., 1900, 224.
- Robellazite** from Colorado (CUMENGE), A., ii, 111.
- Robin** from *Robinia Pseudacacia* (POWER), A., ii, 679.
- Robinia Pseudacacia*, constituents of the bark of (POWER), A., ii, 679.
- colouring matter from the flowers of (PERKIN), P., 1901, 87.
- Robinin** and its decomposition (PERKIN), P., 1901, 87; (SCHMIDT), A., i, 602.
- Rocks** of Ceylon (COOMÁRA-SWÁMY), A., ii, 171.
- from the Newlands Diamond Mines, South Africa (BONNEY), A., ii, 251.

- Rocks**, crystalline, presence of argonides, arsenides, iodides, and nitrides in (GAUTIER), A., ii, 398.  
 igneous, gases liberated by the action of heat on (GAUTIER), A., ii, 171.  
 British igneous, composition of (HARKER), A., ii, 114.  
 volcanic, of Etinde, Cameroons (ESCH), A., ii, 322.
- Rock analyses** (CLARKE), A., ii, 66.  
 recalculation of (KEMP), A., ii, 251.  
 some principles and methods of (HILLEBRAND), A., ii, 75.
- Rocks**, new names. See:—  
 Heumite.  
 Koswite.
- Röntgen-rays**. See Photochemistry.
- Roots**. See Agricultural Chemistry.
- Rosaniline bases**, coloured (WEIL), A., i, 100.
- Rose oils**, German and Bulgarian (SCHIMMEL & Co.), A., i, 395.  
 phenylethyl alcohol in (v. SODEN and ROJAHN), A., i, 39, 733.
- Rose wood**, female, oil of (THEULIER), A., i, 396.
- Rosindone**, 1-amino-, and its acetyl derivative (KEHRMANN and MISSLIN), A., i, 423.  
 2-amino-, and its acetyl derivative (KEHRMANN and STEINER), A., i, 102.  
 3-amino-, and its acetyl derivative (KEHRMANN and SILBERSTEIN), A., i, 103.  
 4-amino-, and its acetyl derivative (KEHRMANN and STEINER), A., i, 101.  
 5-amino-, and its acetyl derivative (KEHRMANN and BARCHE), A., i, 48.
- Rosinduline**, isomerides of, relation between colour and constitution of (KEHRMANN), A., i, 52.  
 chloride, 9-chloro- (9-chloro-5-amino-7-phenylnaphthaphenazonium 7-chloride) (KEHRMANN and KRAZLER), A., i, 420.
- Rosinduline**, amino-, acetyl derivatives of, and their chlorides (KEHRMANN and OTT), A., i, 767.  
 2-amino-, and its salts (KEHRMANN and STEINER), A., i, 102.
- isoRosinduline* No. 8, constitution of (KEHRMANN and MISSLIN), A., i, 422.  
 No. 9, formation and constitution of (KEHRMANN and DENK), A., i, 89; (KEHRMANN and STEINER), A., i, 101.  
 No. 10, structure of (KEHRMANN and STEINER), A., i, 100.
- isoRosinduline* No. 12, formation and constitution of (KEHRMANN and DENK), A., i, 89; (KEHRMANN and STEINER), A., i, 100.  
 No. 13, preparation and structure of (KEHRMANN and SILBERSTEIN), A., i, 103.  
 No. 14 (KEHRMANN and OTT), A., i, 767.  
 No. 15 (KEHRMANN and NÜESCH), A., i, 767.
- isoRosinduline* chloride, acetyl derivative of, and its salts (KEHRMANN and OTT; KEHRMANN and NÜESCH), A., i, 767.
- isoRosinduline*, chloro- (9-chloro-7-*p*-aminophenylnaphthaphenazonium), and its salts (KEHRMANN and KRAZLER), A., i, 421.
- Rosindulines**, 10-chloro-, interaction of, with aromatic bases (KEHRMANN and HIBY), A., i, 419.
- Rosolic acid**, triacetyl derivative (HERZIG and WENGRAF), A., i, 703.
- Roumanite** from Roumania (PONI), A., ii, 27.
- Rubazonic acid** in urine after administration of pyramidone (JAFFÉ), A., ii, 673.
- Rubidic acid** and its potassium salt (HESSE), A., i, 596.
- Rubidium** chloride, double salt of, with indium trichloride (KLEY), A., ii, 626.  
 molybdenyl chloride (NORDENSKJÖLD), A., ii, 454.  
 acid nitrates (WELLS and METZGER), A., i, 652.  
 nitropentachloro-osmate (WERNER and DINKLAGE), A., ii, 661.  
 telluriphosphate (WEINLAND and PRAUSE), A., ii, 600.  
 sulphate, double salt of, with indium sulphate (CHABRIÉ and RENGADE), A., ii, 102.  
 rhodium alum (PICCINI and MARINO), A., ii, 392.
- Rue**, Algerian, oil of (v. SODEN and HENLE), A., i, 396.
- Rum**, absence of methyl alcohol in (WOLFF), A., i, 110; (QUANTIN), A., i, 111.
- Ruthenium** complex compounds (MIO-LATI and TAGIURI), A., ii, 246.
- Ruthenium**, nitroso-compounds, reduction of, and double salts (BRIZARD), A., ii, 107.  
 di- and tri-sulphides (ANTONY and LUCCHESI), A., ii, 247.
- Ruthenium**, estimation and separation of, in platinum ores (LEIDIÉ), A., ii, 62; (LEIDIÉ and QUENNESSEN), A., ii, 695.

**Rutin** and its decomposition (SCHMIDT and WALJASCHKO), A., i, 602.

**Rye and Rye grass.** See Agricultural Chemistry.

# S.

**Saccharimeter**, a simple fermentation (HAMBERGER), A., ii, 354.

**"Saccharin"** (*o-benzoylsulphinide*), action of, on diphenylcarbazine (DÉFOURNEL), A., i, 487.

action of, on gastric digestion (CHASSEVANT), A., ii, 323.

metallic salts of (DÉFOURNEL), A., i, 324.

new reaction of (LEYS), A., ii, 488.

new method of testing (GLÜCKSMANN), A., ii, 588.

new method for the detection of, alone, and in presence of salicylic acid (RIEGLER), A., ii, 46.

detection of, in commercial products (SPICA), A., ii, 704.

detection of, in beer and wine free from salicylic acid (WIRTHLE), A., ii, 135.

detection of, in wine (WIRTHLE), A., ii, 704.

estimation of, in alimentary substances (DÉFOURNEL), A., ii, 588.

estimation of, in beverages (DELLE), A., ii, 46.

**"Saccharin,"** chloro-derivatives of (MASELLI), A., i, 271.

**Saccharose.** See Sucrose.

**Saffron**, adulteration of (FRESENIUS and GRÜNHUT), A., ii, 211.

**"Saffron essence,"** analysis of (FRESENIUS and GRÜNHUT), A., ii, 211.

*iso***Safraninone** and its chloride and nitrate (KEHRMANN and KRAMER), A., i, 52.

**Safrole**, action of iodine and yellow mercuric oxide on (BOUGAULT), A., i, 383, 392.

and *iso***Safrole**, colour reactions of (CHAPMAN), A., ii, 76.

**Sagrada**, glucosides in (AWENG), A., i, 39.

**Salicylaldehyde** methyl ether, new method of preparing (IRVINE), T., 668; P., 1901, 88.

nitrotolelylhydrazone (POPE and HIRD), T., 1143; P., 1901, 186.

**Salicylhydroxamic acid**, ethyl ether (ANGELICO and FANARA), A., i, 708.

**Salicylic acid**, action of chlorine on (TARUGI), A., i, 146.

and its salts, titration of (TELLE), A., ii, 357.

new method of detecting, alone, and in the presence of "saccharin" (RIEGLER), A., ii, 46.

**Salicylic acid**, detection of, in beer and wine (PEREIRA), A., ii, 428.

detection and estimation of, in wines and foods (PELLET), A., ii, 701.

detection and estimation of, in wines (PELLET), A., ii, 207, 701; (FERREIRA DA SILVA), A., ii, 291.

detection of, in wines (FERREIRA DA SILVA), A., ii, 585.

detection of, in urine (PETERMANN), A., ii, 293.

estimation of, in dressings (FRERICHS), A., ii, 204; (TELLE), A., ii, 698.

**Salicylic acid**, bismuth salt (THIBAUT), A., i, 593, 712.

sodium salt, elimination of, by the bile (LIÑOSSIÉ), A., ii, 564.

**Salicylic acid**, benzyl ester (AKTIENGESELLSCHAFT FÜR ANILINFABRIKATION), A., i, 712.

glyceryl ester (TAUBER), A., i, 538.

phenyl ester (*salol*), chlorocarbonate of (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 697.

titration of (TELLE), A., ii, 357.

estimation of, in dressings (TELLE), A., ii, 698.

**Salicylidenebisbarbituric acid** (CONRAD and REINBACH), A., i, 411.

**Saliva**, activity of, in various diseases (ROBERTSON), A., ii, 68.

acidity of (BERTHELOT), A., ii, 611.

dog's, osmotic pressure of (NOLF), A., ii, 176.

human, variation of the quantity of potassium thiocyanate in (GROBER), A., ii, 402; (SCHNEIDER), A., ii, 459.

**Salivary secretion** (MATHEWS), A., ii, 176.

**Salol.** See Salicylic acid, phenyl ester.

**Salt lakes.** See under Water.

**Salt precipitation** by vaporisation of dilute solutions (SKIRROW and CALVERT), A., ii, 440.

**Salt vapours**, electrical conductivity of (WILSON), A., ii, 490.

**Saltpetre.** See Potassium nitrate.

**Salts**, determination of the constitution of complex, by electrolytic transference (RIEGER), A., ii, 638.

electrolysis of, in organic solvents (SPERANSKY and GOLDBERG), A., ii, 157.

electrolysis of fused (LORENZ), A., ii, 538.

theory of the decomposition potentials of fused (LORENZ), A., ii, 142.

aqueous solutions of double, conductivities of (LINDSAY), A., ii, 143; (JONES and CALDWELL), A., ii, 375.

- Salts**, relation of the viscosity of mixtures of solutions of inorganic, to their state of ionisation (BARNES), A., ii, 374.  
 influence of acids on the solubility of, containing the same ion (ENKLAAR), A., ii, 494.  
 action of normal, on solutions containing hydroxyl ions (DOYER VAN CLEEFF), A., ii, 505.  
 hydrolysis of (KULLGREN), A., ii, 149.  
 analysis of mixtures of two (WINKLER), A., ii, 129.
- Samadera indica*, constituents of (VAN DER MARCK), A., ii, 71, 334.
- Samarium**, spectrum of (DEMARÇAY), A., ii, 102.
- Samarium** carbide (MOISSAN), A., ii, 61.  
 nitride (MATIGNON), A., ii, 61.
- Samarskite**, analysis of (LEVY), A., ii, 281.
- Sambucine** (MALMÉJAC), A., ii, 572.
- Sandalwood oil**, West Indian, constituents of (V. SODEN and ROJAHN), A., i, 159.
- Sanguinaria canadensis*, alkaloids of (SCHMIDT; FISCHER), A., i, 742.
- Sanguinarine** from *Chelidonium majus* and *Sanguinaria canadensis* (SCHMIDT; FISCHER), A., i, 742.
- Santalenic acid**, and its salts, methyl ester and bromine derivative (CHAPMAN), T., 134; P., 1900, 204.
- Sap**. See Agricultural Chemistry.
- Saponins** and their distribution (WEIL), A., i, 648.  
 occurrence of, in Cactaceæ (HEYL), A., i, 738.
- Sarcosine** ethyl ester and its picrate (FISCHER), A., i, 193.
- Scapolite** from Galle (COOMARA-SWAMY), A., ii, 171.
- Schenkia blumenaviana*, red colouring matter from (MOLISCH), A., ii, 571.
- Schiff's bases**, compounds of, with sulphurous acid and the alkali hydrogen sulphites (EIBNER), A., i, 376.
- Schinoxydase** (SARTHOU), A., i, 624.
- Schrötterite** (ZAMBONINI), A., ii, 397.
- Scopolamine** from mandragora roots (THOMS and WENTZEL), A., i, 405.  
 relation of, to *i*-scopolamine (GADAMER), A., i, 605.
- Sea water**. See under Water.
- Seaweed** as food (SOLLEID), A., ii, 529.
- Sebacic** diazoimide and hydrazides and their derivatives (CURTIUS and STELLER), A., i, 70.
- Secretion**, nasal and conjunctival, thiocyanates in (MUCK), A., ii, 117.
- Seeds**. See Agricultural Chemistry.
- Selenates**, double, of the type  $R_2M(SeO_4)_2 \cdot 6H_2O$ , crystallography of (TUTTON), A., ii, 546.
- Selenium** hydride, heat of formation of (DE FORCRAND), A., ii, 641.
- Selenium derivatives** of aromatic ketones (KUNCKELL and ZIMMERMANN), A., i, 214.
- Selenium**, influence of, on the tests for arsenic (BERRY), A., ii, 423; (ROSENHEIM), A., ii, 531.  
 detection of, in sulphuric acid (ORLOFF), A., ii, 192; (JOUVE), A., ii, 421.
- Selenium-tellurium-sulphur group**, replacements in the (KRAFFT and STEINER), A., ii, 235.
- Selenocyanic acid**, ethyl ester (WHEELER and MERRIAM), A., i, 515.
- Seminase**, presence of, in non-germinating seeds containing horny albumen (BOURQUELOT and HÉRISSEY), A., ii, 69.  
 influence of sodium fluoride on the action of, on the carbohydrates in the horny albumen of seeds (HÉRISSEY), A., ii, 570.
- Semithiocarbazides**, isomeric (BUSCH and HOLZMANN), A., i, 234.
- Sequoia gigantea*, tannin in (HEYL), A., i, 648.
- Serpentine** from Bosnia (KIŠPATIC), A., ii, 321.
- Serradella**. See Agricultural Chemistry.
- Serum**, influence of chemical reaction on the bactericidal action of (HEGELER), A., ii, 567.  
 horse-, the ammonium sulphate method of separating the proteids of (BLOXAM), A., ii, 404.  
 muscular (RICHTER), A., ii, 117.
- Serum-albumin** and **-globulin**, characteristics of (GUÉRIN), A., ii, 211.
- Serum-globulin**, action of, on the coagulation of muscle plasma (SPIRO), A., ii, 670.
- Sesamé oil**, Baudouin's test for, and Tambon's modification of the test (UTZ), A., ii, 483.  
 Breinl's reaction for (VANDEVELDE), A., ii, 48.  
 detection of, in chocolate (POSSETTO), A., ii, 703.  
 detection of, in animal and vegetable oils (TAMBON), A., ii, 360.
- Sewage**, Odessa, composition of (SELIWANOFF, CHOINA, MOTCHAN, and BONDAREFF; SELIWANOFF), A., ii, 530.
- Sewers**, formation of hydrogen sulphide in (BEYERINCK), A., ii, 119.
- Shale oil**, Scottish, bases in (GARRETT and SMYTHE), P., 1900, 185.



**Sheep.** See Agricultural Chemistry.

**Silicon**, spark spectrum of (HARTLEY), A., ii, 367.

**Silicon** carbide as a reducing agent (NEUMANN), A., ii, 98.

**Silicic acid**, gelatinous, from the Simplon Tunnel (SPEZIA), A., ii, 393.

in connective tissue (SCHULZ), A., ii, 257.

separation of, from tungstic acid (HERTING), A., ii, 284; (WELLS and METZGER), A., ii, 534.

**Silicates**, theory of (VERNADSKY), A., ii, 249.

spectrographic analysis of (HARTLEY and RAMAGE), T., 67; P., 1900, 191.

estimation of ferrous oxide in (DE KONINCK), A., ii, 284.

**Metasilicic acid** (BUTZUREANU), A., ii, 652.

**Hydrofluosilicic acid.** See under Fluorine.

**Silicotungstic acid** as a reagent for the urinary alkaloids (GUILLEMARD), A., ii, 521.

**Silicon organic compounds** :—

tetraphenyl and tetraethyl, preparation of (KIPPING and LLOYD), T., 451; P., 1901, 32.

**Silicon**, commercial metallic, analysis of (NEUMANN), A., ii, 127.

**Silico-spiegels**, analysis of (IBBOYSON and BREARLEY), A., ii, 199.

**Silk**, distinguishing between artificial and natural (SOLARO), A., ii, 52.

**Silveolic acid**,  $\alpha$ - and  $\beta$ -**Silvinolic acids** and **Silvoren** (TSCHIRCH and NIEDERSTADT), A., i, 397.

**Silver**, recovery of, from cupriferous materials (GODSHALL), A., ii, 42.

allotropic modifications of (BERTHELOT), A., ii, 156.

electrochemical relations between the (BERTHELOT), A., ii, 301.

melting point of (HOLBORN and DAY), A., ii, 85.

action of ammonia on, at high temperatures (BEILBY and HENDERSON), T., 1253; P., 1901, 190.

behaviour of, towards carbon monoxide, hydrogen, and oxygen (BERTHELOT), A., ii, 97.

action of, on hydrogen bromide and the inverse reaction (JOUNIAUX), A., ii, 601.

germ theory (PRECHT; PRECHT and STRECKER), A., ii, 1.

**Silver alloys** from Egyptian tombs (BERTHELOT), A., ii, 514.

**Silver alloys** with copper, certain properties of (ROBERTS-AUSTEN and ROSE), A., ii, 25.

with mercury, heat of formation of (BERTHELOT), A., ii, 156.

**Silver salts**, action of, on ammonium persulphate solution (MARSHALL), A., ii, 156.

bromide emulsions, influence of the medium on the photochemical effect in (ABEGG and IMMERWAHR), A., ii, 217.

platininitrochloride (MIOLATI and BELLUCCI), A., ii, 246.

chlorate, decomposition of (SODEAU), T., 249; P., 1900, 209.

chloride, action of solar radiations on, in presence of hydrogen (JOUNIAUX), A., ii, 506.

reduction of, by hydrogen and the inverse reaction (JOUNIAUX; BERTHELOT), A., ii, 448.

iodide, formation of two kinds of mixed crystals of mercuric iodide and (ROOZEBOOM), A., ii, 20.

nitrate, alcoholic, action of, on aromatic bases (VAUBEL), A., i, 691.

action of, on ethyl iodide (v. BIRON), A., i, 111.

action of hydrogen peroxide and sodium carbonate on (v. BAEYER and VILLIGER), A., ii, 654.

interaction of, with disodium phosphate (BERTHELOT), A., ii, 503.

nitrite, action of, on aromatic halogen-substituted compounds (ZNATOWICZ), A., i, 319.

action of ethyl bromoacetate on (SCHOLL and SCHÖFER), A., i, 359.

oxide, basic energy of, in solution (LEVI), A., ii, 654.

dry, and ethyl iodide, action of, on benzoylacetate ester, deoxybenzoin and benzyl cyanide (LANDER), P., 1901, 59.

action of hydrogen peroxide on (v. BAEYER and VILLIGER), A., ii, 315, 654; (BERTHELOT), A., ii, 383.

gold tellurides from Colorado (PALACHE), A., ii, 109.

from Coolgardie, Western Australia (KRUSCH), A., ii, 393; (CARNOT), A., ii, 515.

from Cripple Creek and Coolgardie (RICKARD), A., ii, 663.

**Silver organic compounds** :—

**Silver salts**, compounds of, with aromatic amines and with pyridine (TOMBECK), A., i, 135, 164.

- Silver cyanide**, estimation and separation of copper cyanide and (BRUNCK), A., ii, 478.
- dibromo-, dichloro- and diiodo-platinicyanide* (MIOLATI and BELLUCCI), A., ii, 246.
- thiocyanate in analysis (VAN NAME), A., ii, 130.
- Silver, estimation and separation of** :—  
sources of loss in the estimation of, in copper bars, and a method for its avoidance (VAN LIEW), A., ii, 41.
- estimation of, in surgical dressings (FRERICHS), A., ii, 204.
- estimation of, in ores containing sulphur (HOLLARD), A., ii, 578.
- estimation of, in pyrites (BUDDÉUS ; LOEY), A., ii, 133.
- separation of, electrolytically (FULWEILER and SMITH), A., ii, 692.
- Silver and copper nuggets**, crystalline structure of (LIVERSIDGE), A., ii, 662.
- Sinapis alba*. See Agricultural Chemistry.
- Skin**, impermeability of, to hydrogen sulphide (CHAUVEAU and TISSOT), A., ii, 611.
- Skin activity** in obesity (SCHATTENFROH), A., ii, 174.
- in Europeans and Negroes (RUBNER), A., ii, 173.
- Slags, basic**, detection of fluorine and mineral phosphates in (v. LORENZ), A., ii, 193.
- value of the molybdate process when estimating the citrate-solubility of (FOERSTER), A., ii, 576.
- estimation of phosphoric acid in (PAPEŽ), A., ii, 192.
- Smoke**, injury to trees by (SORAUER and RAMANN), A., ii, 36.
- Soap solutions** (SMITS), A., ii, 12.
- Soaps**, analysis of (BOHRISH), A., ii, 481.
- estimation of fatty acids in (BAUD), A., ii, 358.
- Sodamide**, action of iodine and liquid ammonia on (RUFF), A., ii, 16.
- Sodammonium**, action of, on certain metalloids (HUGOT), A., ii, 18.
- Sodium salts**, combination of, with ammonia in aqueous solution (DAWSON and MCCRAE), T., 499; P., 1901, 6.
- toxic action of, on plants (COUPIN), A., ii, 122.
- Sodium telluriarsenate and telluriphosphate** (WEINLAND and PRAUSE), A., ii, 600.
- biborate (*borax*), distillation of, with methyl alcohol (POLENSKE), A., ii, 195.
- Sodium baborate (*borax*)**, influence of, on metabolism in children (TUNNICLIFFE and ROSENHEIM ; GRÜNBAUM), A., ii, 517.
- bromide and chloride, synthesis of; lecture experiment (ROSENFELD), A., ii, 547.
- and iodide, action of, on crops (VOELCKER), A., ii, 269.
- carbonate and hydrogen peroxide, action of, on silver nitrate (v. BAEYER and VILLIGER), A., ii, 654.
- hydrogen carbonate, and hydroxide, repelling of the ionisation of solutions of, by the addition of sodium chloride (SMITS and WOLFF), A., ii, 505.
- hydrogen carbonate, theory of the formation of, technically (BODLÄNDER and BREULL), A., ii, 383.
- copper carbonate (GRÖGER), A., ii, 240.
- chloride, determination of the decrease of vapour tension of a solution of, at higher temperatures (SMITS), A., ii, 304.
- poisonous effect of pure, on nerve-muscle preparations (CUSHING), A., ii, 671.
- influence of diet on the, in urine (MAUREL), A., ii, 565.
- diuretic effects of (THOMPSON), A., ii, 30.
- and sulphate, diuretic action of isotonic solutions of (MAGNUS), A., ii, 67.
- compound of, with uranyl chloride (ALOY), A., ii, 164.
- gold chloride, assay of (JOHNSON & SONS), A., ii, 350.
- chromate, new hydrate of (SALKOWSKI), A., ii, 514.
- chromates, solubility of, in water (DIETZ, FUNK, v. WROCHEM, and MYLIUS), A., ii, 104.
- fluoride, influence of, on the action of seminae on the carbohydrates in the horny albumen of seeds (HÉRISSEY), A., ii, 570.
- hydroxide and its hydrates, thermal properties of (DE FORCRAND), A., ii, 593.
- nitrate, absorption of water vapour by (BUSNIKOFF), A., ii, 59.
- decomposition of, by sulphuric acid (VOLNEY), A., ii, 600.
- See also Agricultural Chemistry.
- peroxide, properties of (JAUBERT), A., ii, 96; (DE FORCRAND), A., ii, 155.
- preparation and properties of hydrates of (JAUBERT), A., ii, 155.

**Sodium :—**

Disodium phosphate, interaction of, with silver nitrate (BERTHELOT), A., ii, 503.

**Sodium sulphate**, influence of, on the vapour pressure of aqueous ammonia solutions (PERMAN), T., 725 ; P., 1901, 47.

absorption of water vapour by (BUSNIKOFF), A., ii, 59.

solubility of mixtures of copper sulphate and (MASSOL and MALDÉS), A., ii, 594.

hydrate,  $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$ , spontaneous crystallisation of, from saturated solutions of the sulphate (DE COPPET), A., ii, 384.

and sodium potassium nitrilosulphates (DIVERS and HAGA), T., 1096 ; P., 1901, 164.

sulphide, action of, on potassium ferrocyanide (BERTHELOT), A., i, 20.

disulphide, reducing action of (BLANKSMA), A., i, 461.

substitutions and transformations effected by (BLANKSMA), A., i, 460.

polysulphides (BLANKSMA), A., i, 264.

thiosulphate, action of hydrogen peroxide on (NABL), A., ii, 16.

action of, on solutions of metallic salts at high temperatures and pressures (NORTON), A., ii, 624.

**Sodium organic compounds :—**

thiocyanate, action of heat on (GILES), A., i, 262.

**Soils**, analysis of (BERJU), A., ii, 193 ; (HAZARD), A., ii, 282 ; (STOLLEMA ; MURRAY), A., ii, 350.

uniformity in (HALL), A., ii, 80.

estimation of readily soluble alkaline earths and their carbonates in (IMMENDORFF), A., ii, 130.

estimation of calcium in, by the citrate method (PASSON), A., ii, 347.

estimation of calcium oxide in (HOTTER), A., ii, 623.

estimation of clay in (PAGNOUL), A., ii, 283.

estimation of humus in (BIELER and ASÓ), A., ii, 709.

estimation of dry matter in (PUCHNER), A., ii, 479.

rapid estimation of nitrates in (MONTANARI), A., ii, 688.

estimation of phosphoric acid in (v. LORENZ), A., ii, 278 ; (GULLY), A., ii, 576.

estimation of potash in (RÜMLER), A., ii, 196.

See also Agricultural Chemistry.

**Solanine**, formation of, in potatoes by Bacteria (WEIL), A., ii, 266.

**Solanine**, hydrolysis of (SCHULZ), A., i, 92.

hæmolysis produced by (HÉDON), A., ii, 325.

**Solidification point** of fatty acids (MORESCHINI), A., ii, 48.

**Solubility**. See under Solution.

**Solution**, researches on (WYROUBOFF), A., ii, 149.

theory of (LEWIS), A., ii, 10 ; (JAUMANN), A., ii, 89 ; (NERNST), A., ii, 647.

resorption of one, by another (OKER-BLOM), A., ii, 543.

velocity of. See Affinity.

**Solubility**, Etard's law of (COHEN and BÜCHNER), A., ii, 375.

and reaction velocity (BANCROFT), A., ii, 150.

and surface tension (HULETT), A., ii, 493.

relation between heat of solution and (CAMPETI), A., ii, 642.

of acetylene and ethylene, comparison of the (TUCKER and MOODY), A., ii, 696.

of alkali chlorides and chlorates (WINTERER), A., ii, 96.

of alkaloids in carbon tetrachloride (SCHINDELMEISER), A., i, 287.

of alums (LOCKE), A., ii, 656.

of barium sulphate in solutions of sodium thiosulphate (DOBBIN), A., ii, 348.

of cadmium fluoride (JAEGER), A., ii, 386.

of calcium and sodium chromates in water (DIETZ, FUNK, v. WROCHEM, and MYLIUS), A., ii, 104.

of lime in water at different temperatures (GUTHRIE), A., ii, 315.

of calcium oxalate (RICHARDS, McCaffrey, and BISBEE), A., ii, 624.

of chlorine in aqueous hydrochloric acid (MELLOR), T., 225 ; P., 1900, 221.

of cobalt and nickel iodates and their hydrates in water (MEUSSER), A., ii, 555.

of mixtures of copper sulphate and sodium sulphate (MASSOL and MALDÉS), A., ii, 594.

of *n*-decanedicarboxylic acid (WALKER and LUMSDEN), T., 1202 ; P., 1901, 188.

of ethyl nitrate in water (v. BIRON), A., i, 111.

of gases in organic solvents (JUST), A., ii, 439.

in water (WINKLER), A., ii, 446.

of hydroxyazobenzene (FARMER), T., 865 ; P., 1901, 129.

- Solubility** of lead salts in water (v. ENDE), A., ii, 241.  
 of manganous sulphate and its hydrates (COTTRELL), A., ii, 12; (RICHARDS and FRAPPIÉ), A., ii, 553.  
 of mercury haloid salts and mercuric cyanide in organic solvents (SULC), A., ii, 101.  
 of metallic hydroxides in ammonium and sodium salicylates (WOLFF), A., ii, 198.  
 of neodymium chloride (MATIGNON), A., ii, 602.  
 of red phosphorus in aqueous alcoholic potash (BURGESS and CHAPMAN), T., 1243; P., 1901, 190.  
 of pigments in fats and soaps (NERKING), A., ii, 117.  
 of precipitates containing heavy metals, electrochemical studies of the (IMMERWAHR), A., ii, 301.  
 of quartz in solutions of borax (SPEZIA), A., ii, 605.  
 of salts (MYLIUS), A., ii, 550.  
 of salts containing the same ion, influence of acids on the (ENKLAAR), A., ii, 494.  
 of silver oxide (LEVI), A., ii, 654.  
 of sodium hydrogen carbonate in sodium chloride solutions (BODLÄNDER and BREULL), A., i, 384.  
 of theobromine (PAUL), A., i, 341.  
 of tutin (EASTERFIELD and ASTON), T., 124.  
 of uranium nitrate (OECHSNER DE CONINCK), A., ii, 104, 105, 164.  
 of uranium sulphate (OECHSNER DE CONINCK), A., ii, 660.  
 of uric acid in sulphuric acid (TAFEL), A., i, 236.  
 in water and in mineral acids (HIS and PAUL), A., i, 131.
- Solutions**, action of heat on the absorption spectra and chemical constitution of saline (HARTLEY), A., ii, 53.  
 thermochemistry of very dilute (v. STEINWEHR), A., ii, 641.  
 specific heat of (PUSCHL), A., ii, 224.  
 vapour tension of (PONSOT), A., ii, 593.  
 which are not very dilute, determination of the decrease in vapour tension, and of the lowering of the freezing point of (SMITS), A., ii, 304, 436.  
 degree of dissociation of dilute (TARUGI and BOMBARDINI), A., ii, 89.  
 compressibility of (GUINCHANT), A., ii, 227.  
 osmotic pressure of complex (JAKOWKIN), A., ii, 87.  
 viscosity of mixtures of liquids and (LEES), A., ii, 148.
- Solutions**, colloidal. See Colloidal.  
 solid, in ternary mixtures (BRUNI), A., ii, 11; (BRUNI and GORNI), A., ii, 150.  
**Supersaturation**, distinction between chemical and physical, of liquids by gases (BERTHELOT), A., ii, 8.  
**Solution pressure**, electrolytic (LEHFELDT), A., ii, 4, 5; (KRÜGER), A., ii, 145.  
**Solvent**, liquid nitrogen peroxide as a solvent (FRANKLAND and FARMER), T., 1356; P., 1901, 201.  
**Solvents**, inorganic, and their dissociative power (WALDEN), A., ii, 11; (TOLLOCZKO), A., ii, 437.  
 influence of, on the rotation of optically active compounds (PATTERSON), T., 167, 477; P., 1900, 176; 1901, 40.  
 influence of, on the rotation of ethereal dimethoxysuccinates and tartrates (PURDIE and BARBOUR), T., 971; P., 1901, 158.  
 See also Cryoscopy.
- Soot**, mineral constituents of (HARTLEY and RAMAGE), A., ii, 399.  
**Sorbic acid**, and its amide, anilide, chloride, nitrile and methyl ester (DOEBNER and WOLFF), A., i, 578.  
**Soxhlet's apparatus**, modifications of (OSBORNE), A., ii, 136.  
**Specific gravity**. See Density.  
 heat. See Thermochemistry.
- Spectrum**. See Photochemistry.
- Spermase** from barley (GRÜSS), A., ii, 34.  
**Sphaerocobaltite** from Libiola, Italy (FERRO), A., ii, 395.  
*Spirillum desulfuricans* (BEYERINCK), A., ii, 120; (SALTET and STOCKVIS), A., ii, 265.
- Spirits**, detection of foreign colouring matter in (CRAMPTON and SIMONS), A., ii, 134.  
 renatured, method for identifying (RAIKOW and SCHTARBANOFF), A., ii, 582.  
 See also Brandy and Rum.
- Spleen**, occurrence of arginine in the (v. GULEWITSCH and JOCHELSOHN), A., ii, 29.  
 proteolytic enzyme in the (HEDIN and ROWLAND), A., ii, 402.  
 rôle of the, in trypsin formation (HERZEN; CAMUS and GLEY), A., ii, 324.  
 metabolism in the dog before and after removal of the (NOËL-PATON), A., ii, 29.
- Spongio-melanoidin**, physiological action of (ROSENFELD), A., ii, 180.

- Spring water.** See under Water.
- Squamic acid** from lichens (HESSE), A., i, 150.
- Stable manure.** See Agricultural Chemistry.
- Stannic and Stannous compounds.** See under Tin.
- Stannite**, crystallised, from Bolivia (SPENCER and PRIOR), A., ii, 392.
- Starch**, transitory, dependence of the production of, on temperature and on the action of oxydases (GRÜSS), A., ii, 33.  
influence of variety of potatoes and manures on the quality of (GUFFROY), A., ii, 684.  
estimation of, in potatoes (BAUMERT, BODE, and FEST), A., ii, 44;  
(BEHREND and WOLFS), A., ii, 536.
- Starch-granules**, combined action of diastase and yeast on (MORRIS), T., 1085; P., 1901, 178.
- Starch preparation** used for confitures and creams, analysis of (FREHSE), A., ii, 536.
- Starch-sugar**, detection of, in wine (DELE), A., ii, 44.
- Steam** from saturated salt solutions, latent heat of evaporation of (TROU-  
TON), A., ii, 592.  
See also Water.
- Stearamide** (ORTON), T., 1356; P., 1901, 200.
- Stearic acid**, commercial, action of zinc powder on (HÉBERT), A., i, 251.
- Steel.** See under Iron.
- Stereochemistry** of nitrogen (SIMON), A., i, 49.  
in the piperidine series (HOHENEMSER and WOLFFENSTEIN), A., i, 606;  
(MARCUSE and WOLFFENSTEIN), A., i, 608; (GROSCHUFF), A., i, 745.
- Stereoisomerides**, velocity of esterifica-  
tion and hydrolysis of (MARKWALD and MCKENZIE), A., ii, 229.
- Stereoisomerism** of the oximes, model of the nitrogen atom showing (WEDE-  
KIND), A., ii, 596.
- Stibio-domeykite** from Lake Superior (KOENIG), A., ii, 109.
- Stibiotantalite** from Western Australia (SIMPSON), A., ii, 454.
- Stilbazole** (*styrylpyridine*), *o*-, *m*-, and *p*-nitro-, and their salts (FEIST), A., i, 290.
- Stilbene** (*s-diphenylethylene*) nitrosite and dinitrite (SCHMIDT), A., i, 266.
- Stilbene**, amino-, nitro-, and nitroamino-derivatives of, and their acetyl and halogen additive compounds (THIEFF and ESCALFS), A., i, 689.
- Stilbene**, *diamino*- and *dinitro- $\alpha$ -cyano*-derivatives of (FREUND), A., i, 690.
- $\omega$ -dinitro-** (SUDBOROUGH), P., 1901, 68.  
isomeric (SCHMIDT), A., i, 266.
- isoStilbene** and bromo-, and dibromide (WISLICENUS and JAHRMARKT), A., i, 265.
- Stilbene-*o*-carboxylic acid**, ammonium and silver salts, dibromide, and dinitro-derivative and lactones of (LEUPOLD), A., i, 711.
- Stillingia sebifera**, fat and oil of the seeds of (TORTELLI and RUGGERI), A., ii, 34.
- Stoffertite** from the island of Mona, West Indies (KLEIN), A., ii, 558.
- Stomach**, fat-splitting enzyme of the (VOLHARD), A., ii, 518.  
zymogens of the (GLAESSNER), A., ii, 666.  
See also Digestion and Gastric juice.
- Strontianite** from Münster-Land (BEY-  
KIRCH), A., ii, 247.
- Strontium** borate (OUVRARD), A., ii, 158.  
nitrate, combination of, with am-  
monia in aqueous solution (DAWSON and McCRAE), T., 1069; P., 1901, 177.  
sulphide, preparation and crystalline form of (MÜLLER), A., ii, 60.
- Strontium ferricyanides** (FISCHER and MÜLLER), A., i, 455.
- Strontium**, estimation of, as the oxalate (PETERS), A., ii, 692.
- Strychnine**, action of bromine on (KIPPENBERGER), A., ii, 52.  
action of, on the spinal cord of rabbits (HARE), A., ii, 522.  
compound of, with  $\alpha$ -chlorohydrin, and base from (BIENENTHAL), A., i, 129.  
use of, for the detection of bromates and chlorates (FAGES), A., ii, 191.
- Strychnine alkaloids**, reaction of, with perchloric acid (HAEUSSERMANN and SIGEL), A., ii, 124.
- 3-Styrenyl-1-methylhydroxytriazole** and its silver salt and acetyl derivative (YOUNG and OATES), T., 666; P., 1901, 86.
- Styrylitaconic acid** and its calcium salt (FICHTER and HIRSCH), A., i, 594.
- Subereneacetic acid**, and its methyl ester (WALLACH and VAN BEECK-VOLLENHOVEN), A., i, 156.
- Suberic diazomide** and dihydrazide and their derivatives (CURTIUS and CLEMM), A., i, 69.
- Suberyldihydroxamic acid** (ANGELICO and FANARA), A., i, 708.

**Submaxillary gland.** See Gland.

**Substance** ( $C_2H_4S_2$ ) $_n$ , from ethylene bromide and sodium disulphide (BLANKSMA), A., i, 461.

$C_3H_4ON_4S_2$ , obtained in the preparation of canarin (GOLDBERG), A., i, 194.

$C_4H_2O_3N_4$ , from the action of nitric acid on acetylene (TESTONI and MASCARELLI), A., i, 494.

$C_4H_5O_5N_3$ , from the action of nitric acid on  $C_{16}H_{26}O_{11}N_{12}S_3$  (V. VOGEL), A., i, 262.

$C_6H_2Br_6S_3$ , and its derivatives, from the action of bromine on a chloroform solution of tetraethenyl hexa-sulphide (FROMM and MÄNGLER), A., i, 184.

$C_6H_6O_6$ , from *d*-tartaric acid and formaldehyde (ALBERDA VAN EKENSTEIN), A., i, 120.

$C_6H_6O_6N_2$ , from the nitration of methyl butyrylacetoacetates (BOUVEAULT and BONGERT), A., i, 500.

$C_6H_8O_7$ , from citric acid and formaldehyde (ALBERDA VAN EKENSTEIN), A., i, 120.

$C_6H_9O_4N$ , from a mixture of nitric and sulphuric acids on ethyl crotonate (WAHL), A., i, 310.

$C_7H_7O_5N_2$ , and its acetyl derivative, from the nitration of nitro-*p*-tolueneazoisimide (ZINCKE and DROST), A., i, 73.

$C_7H_{10}O_4N_2$ , from the oxidation of phellandrene nitrite (WALLACH and H. and E. LAUFFER), A., i, 89.

$C_8H_{11}O_9N_3$ , from ammonia and ethyl cyanoethylacetonedicarboxylate (DERÖME), A., i, 313.

$C_8H_7O_3N$ , from the action of light on *o*-nitrobenzaldehyde (CIAMICIAN and SILBER), A., i, 391, 548.

$C_9H_{10}O_3$ , and its chloride, from 2-hydroxy-*m*-tolualdehyde (STOERMER and BEHN), A., i, 726.

$C_9H_{18}O$ , from the action of sulphuric acid on the glycol from isobutaldehyde and isovaleraldehyde (LÖWY and WINTERSTEIN), A., i, 626.

$C_{10}HN_2Cl_{11}$ , reactions of (SELL and DOOTSON), T., 899; P., 1901, 131.

$C_{10}HON_2Cl_7$ , from the action of stannous chloride on  $C_{10}HN_2Cl_{11}$ , and of heat on  $C_{10}HON_2Cl_9$  (SELL and DOOTSON), T., 905; P., 1901, 131.

$C_{10}HON_2Cl_9$ , from the action of water, alcohol, or weak acids on  $C_{10}HN_2Cl_{11}$  (SELL and DOOTSON), T., 902; P., 1901, 131.

**Substance**,  $C_{10}HO_5N_2Cl_7$ , from the action of sulphuric acid on  $C_{10}HN_2Cl_{11}$  (SELL and DOOTSON), T., 903; P., 1901, 131.

$C_{10}H_7ON_3$ , from the action of stannous chloride and hydrochloric acid on the potassium salt of  $\alpha$ - and  $\beta$ -nitroso- $\beta$ - and  $\alpha$ -naphthylamines (HARDEN and OKELL), P., 1900, 229.

$C_{10}H_8OBr_8$ , from the bromination of menthone (v. BÄYER and SEUFERT), A., i, 216.

$C_{10}H_{14}O_2NBr$ , from the oxidation of  $C_{10}H_{17}O_2N_2Br$  (FORSTER), T., 657; P., 1901, 88.

$C_{10}H_{15}O_3N_2$ , from ethyl  $\beta\beta$ -diacetylpropionate and semicarbazide hydrochloride (MARCH), A., i, 312.

$C_{10}H_{16}O_2$ , from the biological oxidation of fenchone (RIMINI), A., i, 394.

$C_{10}H_{16}O_2N_2$ , and its salts, from the action of caustic soda on  $C_{10}H_{17}O_2N_2Br$  (FORSTER), T., 658; P., 1901, 88.

$C_{10}H_{17}O_2N_2Br$ , from the action of hydroxylamine on 1:1-bromonitrocamphane anhydrides (FORSTER), T., 654; P., 1901, 88.

$C_{10}H_{18}O_2N_6S_2$  and  $C_{10}H_{20}O_4N_6Cl_2$ , from the action of hydrogen sulphide and of hydrochloric acid on porphyrine (PILOTY and SCHWERIN), A., i, 518.

$C_{11}H_7O_2N_3$ , from *o*-aminobenzaldehyde and barbituric acid (CONRAD and REINBACH), A., i, 410.

$C_{11}H_8O_4$ , from bromomethylfurfural and sulphurous acid (FENTON and GOSTLING), T., 815; P., 1901, 119.

$C_{11}H_9O_5N_3$ , from the action of alkalis on  $\alpha$ -dinitrophenylpyridine (SPIEGEL and KATZENELLENBOGEN), A., i, 752.

$C_{11}H_{10}O_2N_2$ , from the action of phenylhydrazine on isopyromucic acid (CHAVANNE), A., i, 649.

$C_{11}H_{13}O_5N$ , from isopropylidenebis-tetronic acid and hydroxylamine hydrochloride (WOLFF and SCHIMPF), A., i, 284.

$C_{12}H_8O_2N_4$ , from the action of nitric acid on anilopyrine (MICHAELIS and GUNDEL), A., i, 351.

$C_{12}H_{10}O_5$ , and its silver compound and methyl derivative, from the auto-oxidation of anthragallol (BAMBERGER and PRAETORIUS), A., i, 730.

$C_{12}H_{13}O_2N_6Cl$ , from methyl chloro-carbonate and pyridine (FARBEN-FABRIKEN VORM. F. BAYER & Co.), A., i, 662.

- Substance**,  $C_{12}H_{15}O_8N$ , from the interaction of ethyl bromoacetate and silver nitrate (SCHOLL and SCHÖFER), A., i, 359.
- $C_{12}H_{16}O_4N_4$ , from urethanophenyl-acetoxamidine and cyanic acid (LEHMANN), A., i, 276.
- $C_{12}H_{20}N_4$ , and its hydrochloride and platinichloride, from acetonylacetone and hydrazine hydrate (GRAY), T., 682; P., 1901, 90.
- $C_{12}H_{21}N_6$ , from acetonylacetone and hydrazine hydrate (GRAY), T., 684; P., 1901, 90.
- $C_{13}HNCI_8S_2$ , from heating acridine with sulphur monochloride (EDINGER and ARNOLD), A., i, 753.
- $C_{13}H_8O_2N_4Cl_2$ , from the action of heat on 2-triazo-3:6-dichlorobenzaldehyde *p*-nitrophenylhydrazone (BAMBERGER and DEMUTH), A., i, 392.
- $C_{13}H_{16}O_5N_2S$ , from the oxidation of *p*-nitrobenzyl alcohol in presence of sulphanic acid (WALTER), A., i, 694.
- $C_{13}H_{13}O_4NS$ , from salicylaldehyde and aniline sulphite solution (EIBNER), A., i, 378.
- $C_{13}H_{16}O_5N_2$ , from glucosamine and phenylcarbimide (STEUDEL), A., i, 674.
- $C_{13}H_{18}O$ , from the action of alcoholic potash on tilladin (BRAUTIGAM), A., i, 93.
- $C_{14}H_2O_2Br_2$ , from the action of glacial acetic acid on tetrabromo-*o*-quinone (JACKSON and KOCH), A., i, 598.
- $C_{14}H_{11}O_5Br$ , from the action of bromine on dimethyldihydrophthalide-tetronic acid (WOLFF and GABLER), A., i, 285.
- $C_{14}H_{12}ON_2$ , from the action of air and water on  $\beta$ -benzylhydroxylamine (BAMBERGER and SZOLAYSKI), A., i, 84.
- $C_{15}H_{15}ONS$ , from benzyldeneaniline and thioacetic acid (EIBNER), A., i, 321.
- $C_{15}H_{16}O_8$ , from glyceraldehyde, phloroglucinol, and sulphuric acid (WOHL and NEUBERG), A., i, 12.
- $C_{15}H_{19}O_5$ , and its anilide, from phenylcarbimide and ethyl 2-cyclopentanecarboxylate (DIECKMANN), A., i, 539.
- $C_{15}H_{26}O_2$ , from calamus oil (v. SODEN and ROJAHN), A., i, 395; (THOMS and BECKSTROEM), A., i, 396.
- $C_{15}H_{30}O_3$ , and its acetyl derivative, from isovaleraldehyde (LEDERER; ROSINGER), A., i, 669.
- Substance**,  $C_{16}H_{16}O_3$ , obtained in the synthesis of coumaranone (STOERMER and BARTSCH), A., i, 94.
- $C_{16}H_{15}O_4N_2Cl_2P$ , from malephenylamic acid and phosphorus oxychloride (VAN DORP and VAN HAARST), A., i, 137.
- $C_{16}H_{17}O_{18}N_7Na_2$ , from the action of sodium hydroxide on  $C_{16}H_{26}O_{11}N_{12}S_3$  (v. VOGEL), A., i, 262.
- $C_{16}H_{18}O_3N_2S$ , from dimethylaniline, formaldehyde, sodium *p*-toluidine-sulphonate, and potassium dichromate (WALTER), A., i, 694.
- $C_{16}H_{18}O_4$ , from phenylcarbimide and ethyl 2-cyclohexanecarboxylate (DIECKMANN), A., i, 542.
- $C_{16}H_{26}O$ , obtained in the preparation of  $\beta$ -octinyl alcohol (MOUREU and DESMOTS), A., i, 443.
- $C_{16}H_{26}O_{11}N_{12}S_3$ , from the condensation of isodialuric acid with thiocarbamide (v. VOGEL), A., i, 262.
- $C_{17}H_{14}ON_4$ , from benzeneazopyrrole and phenylcarbimide (PLANCHER and SONCINI), A., i, 432.
- $C_{17}H_{16}N_2$ , from benzaldehyde and phenylmethylpyrazoline (TRENER), A., i, 232.
- $C_{17}H_{18}O_4N_2H_2O$ , from the action of formaldehyde on methyl anthranilate (ERDMANN), A., i, 592.
- $C_{18}H_{11}O_5N$ , from the action of nitric acid on 2:5-dibenzoylfurfuran (PHELPS and HALE), A., i, 556.
- $C_{18}H_{14}O_{10}$ , from acetaldehyde and anhydrotetronic acid (WOLFF and GABLER), A., i, 285.
- $C_{18}H_{15}ON$ , from  $\beta$ -naphthol, formaldehyde, *p*-toluidine hydrochloride, and sodium chromate (WALTER), A., i, 694.
- $C_{18}H_{17}N_3$ , and its acetyl derivative, from the reduction of aminodiphenylimide (BÖRNSTEIN), A., i, 375.
- $C_{18}H_{18}O_3$ , and its bromo-derivative, from the iodination of phenol (VAUBEL), A., i, 143.
- $C_{18}H_{18}O_4$ , from the action of sulphuric acid on ethyl *m*-xylylenediacetate (EHRHAIM), A., i, 688.
- $C_{18}H_{20}O_4N_4$ , from urethanophenyl-acetoxamidine and phenylcarbimide (LEHMANN), A., i, 276.
- $C_{18}H_{20}O$ , and its polymeride, from methyl nonyl ketone and benzaldehyde (CARETTE), A., i, 13, 127.
- $C_{18}H_{26}O_2$ , from the action of sulphuric acid on the glycol from isobutaldehyde and isovaleraldehyde (LÖWY and WINTERSTEIN), A., i, 626.

**Substance,**  $C_{19}H_{13}ON_4$ , from benzeneazo-2:4-dimethylpyrrole and phenylcarbimide (PLANCHER and SONCINI), A., i, 432.

$C_{19}H_{18}N_2SO_2 \cdot \frac{1}{2}H_2O$ , from heating benzylidenedianiline anhydrosulphite with water (EIBNER), A., i, 378.

$C_{19}H_{22}ON_4$ , from  $\beta$ -camphornitrilamide, bromine, and sodium hydroxide (TIEMANN and TIGGES), A., i, 19.

$C_{20}H_{15}O_3N$ , from  $\beta$ -naphthol, furfuraldehyde, and ammonia (BETTI), A., i, 82.

$C_{20}H_{15}N_3S$ , from  $\alpha\delta$ -diphenylsemithiocarbazine and benzaldehyde (BUSCH and HOLZMANN), A., i, 235.

$C_{20}H_{18}ON_2S$ , two (m. p. 145—150° and 141—142°), from diphenylformamidine and thiobenzoic acid, and phenylbenzenylamidine and thiobenzoic acid (WHEELER), A., i, 636.

$C_{20}H_{22}O_7$ , from Jamaica dog-wood (FREER and CLOVER), A., ii, 333.

$C_{20}H_{27}ON$ , from  $\beta$ -naphthol, valeraldehyde, and ammonia (BETTI), A., i, 82.

$C_{20}H_{32}O_2$ , or  $C_{20}H_{32}O_2$ , obtained in the preparation of fenchocarboxylic acid (WALLACH and v. WESTPHALEN), A., i, 331.

$C_{21}H_{15}O_2Cl \cdot HCl$ , from the action of hydrochloric acid on 7-hydroxy-2:4-diphenyl-1:4-benzopyranol hydrochloride (BÜLOW and v. SICHERER), A., i, 603.

$C_{22}H_{18}O_6$ , from Jamaica dog-wood (FREER and CLOVER), A., ii, 333.

$C_{22}H_{20}O_4N_4$ , from toluene and the phenylhydrazone of methyl formylphenylacetate (WISLICENUS and BINDEMANN), A., i, 362.

$C_{22}H_{28}O_6N$ , from *o*-aminoacetophenone and ethyl oxalate (CAMPS), A., i, 751.

$C_{23}H_{20}O_6N_4$ , from the action of alcoholic sodium ethoxide on the condensation product of 2:3:4:5-tetraminotoluene and ethyl cetipate (THOMAS-MAMERT and STRIEBEL), A., i, 615.

$C_{23}H_{22}O_7$ , from Jamaica dog-wood (FREER and CLOVER), A., ii, 333.

$C_{23}H_{24}O_3N_4Cl_2$ , from antipyrine and carbonylchloride (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 662.

$C_{23}H_{31}O_{12}N_3$ , from *p*-nitrobenzamidine and ethyl oxalylacetate (RAPPEPORT), A., i, 569.

**Substance,**  $C_{24}H_{17}ON_3$ , from  $\alpha$ -quinophthaline and phenylhydrazine (EIBNER and LANGE), A., i, 349.

$C_{24}H_{18}O$ , from the action of sodium ethoxide on acetophenone and ethyl malonate (STOBBE), A., i, 549.

$C_{24}H_{18}O_2N_3Cl$ , obtained in the preparation of aniline-black by Müller's method (BÖRNSTEIN), A., i, 400.

$C_{24}H_{19}ON$ , and its acetyl derivative, from  $\beta$ -naphthol, benzaldehyde, and ammonia (BETTI), A., i, 82.

$C_{24}H_{36}N_2$ , and its dinitrosoamine, and acyl and glyoxaline derivatives, from the reduction of isovaleraldehyde-*p*-toluidine (EIBNER and PURUCKER), A., i, 168.

$C_{25}H_{22}O_7$ , from Jamaica dog-wood (FREER and CLOVER), A., ii, 333.

$C_{27}H_{18}O_2$ , from salicylaldehyde and  $\beta$ -naphthol (ROGOFF), A., i, 152.

$C_{27}H_{18}O_7$ , from salol and the additive compound of pyridine and salol chlorocarbonate (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 662.

$C_{27}H_{22}O$ , from indene and cinnamaldehyde (THIELE), A., i, 76.

$C_{27}H_{24}ON_2S$ , from phenyl-*p*-tolylbenzenylamidine and thiobenzoic acid (WHEELER), A., i, 636.

$C_{28}H_{18}O_2$ , obtained in the preparation of nitroanthracene (DIMROTH), A., i, 198.

$C_{28}H_{18}O_3$ , from piperonaldehyde and  $\beta$ -naphthol (ROGOFF), A., i, 152.

$C_{28}H_{19}O_7Br$ , from the acetylation of  $C_{19}H_9O_3Br$  (LIEBERMANN and LANSER), A., i, 466.

$C_{28}H_{20}O_2$ , from anisaldehyde and  $\beta$ -naphthol (ROGOFF), A., i, 152.

$C_{28}H_{20}O_3$ , from  $\beta$ -naphthol and vanillin (ROGOFF), A., i, 152.

$C_{28}H_{20}O_4$ , from the oxidation of tetraphenylcyclopentenolone (HENDERSON and CORSTORPHINE), T., 1261; P., 1901, 191.

$C_{28}H_{22}ON_2$ , from benzhydrol and benzenazo- $\alpha$ -naphthol (MÖHLAU and KEGEL), A., i, 56.

$C_{28}H_{26}O_4$ , obtained in the preparation of  $\gamma$ -phenacyl- $\gamma$ -phenylpyrotartaric acid (STOBBE and RUSSWURM), A., i, 148.

$C_{29}H_{32}O_{12}N_4$ , from apiosedextrosephloroglucinol and benzenediazonium chloride (VONGERICHTEN), A., i, 647.

$C_{30}H_{21}O_2N_4Cl_3$ , obtained in the preparation of aniline-black by Müller's method (BÖRNSTEIN), A., i, 400.



- Substance**,  $C_{30}H_{22}O_2$ , from the decomposition of  $\beta$ -methylantranol (LIMPRICHT), A., i, 145.
- $C_{30}H_{22}ON$ , from  $\beta$ -naphthol, benzaldehyde, and aniline (BETTI), A., i, 82.
- $C_{30}H_{22}O$ , from cuminaldehyde and  $\beta$ -naphthol (ROGOFF), A., i, 152.
- $C_{30}H_{52}O_2$ , from the wax of the wild fig tree (GRESHOFF and SACK), A., i, 445.
- $C_{35}H_{60}O_6$ , from agaric (ADRIAN and TRILLAT), A., i, 211.
- $C_{40}H_{62}O_{24}N_{10}$ , from the action of nitrous acid on caoutchouc (HARRIES), A., i, 734.
- $C_{66}H_{54}O_2N_8$ , and  $C_{68}H_{66}O_4N_8$ , from "Michler's hydrol" and diphenyl- and dianisyl-disazo- $\alpha$ -naphthol (MÖHLAU and KEGEL), A., i, 57.
- from lichens (HESSE), A., i, 85, 149 ; (ZOPF), A., i, 88, 547.
- from oil of lemons (BURGESS), P., 1901, 171 ; (THEULIER), A., i, 218 ; (v. SODEN), A., i, 733.
- Substitution** in phenol (LAPWORTH), T., 1267.
- Succinaldehydoacetal** imino-ether (HARRIES), A., i, 452.
- Succinanil**, chloro- (VAN DORP and VAN HAARST), A., i, 138.
- Succindialdehyde** and its hydrate (HARRIES), A., i, 451, 633.
- Succindaldoxime** and its dibenzoyl and dimethoxy derivatives (HARRIES), A., i, 452.
- Succinic acid** (*ethanedicarboxylic acid*), condensation of, with furfuraldehyde (FICHTER and SCHEVERMANN), A., i, 479.
- detection of (NEUBERG), A., ii, 290.
- Succinic acid**, diethyl ester, addition of, to  $\alpha\beta$ -unsaturated ketones and esters (STOBBE), A., i, 147, 276.
- 2:4-diiodophenyl ester (BRENANS), A., i, 643.
- Succinic acid**, halogen, action of ammonia and amines on (LUTZ), A., i, 7.
- l*-bromo-, action of hydrazine and phenylhydrazine on (LUTZ), A., i, 9.
- iso***Succinic acid**. See Methylmalonic acid.
- Succinimidequinaldine** and its salts, and the action of hydrochloric acid on (EIBNER and LANGE), A., i, 350.
- Succinonitrile**, equilibrium in the system, water, ether, and (SCHREINEMAKERS), A., ii, 641.
- Succinotetramethylacetal** (HARRIES), A., i, 633.
- and its hydrogen sulphite and bromophenylhydrazones (HARRIES), A., 451.
- "**Sucrase**," difficulty in the isolation of (SALKOWSKI), A., i, 180.
- Sucrose** (*cane sugar*; *saccharose*), presence of, in gentian root (BOURQUELOT and HÉRISSEY), A., ii, 34.
- presence of, in Panama wood (MILLÈRE), A., ii, 185.
- occurrence of, in the fruit of *Paris quadrifolia* (KROMER), A., ii, 618.
- influence of temperature on the specific rotation of (SCHÖNROCK), A., ii, 287.
- measurement of the rotatory power of, its variation with temperature, and with the wave length of the light used (PELLAT), A., i, 672.
- density, expansion, and capillarity of aqueous solutions of (DOMKE, HARTING, and PLATO), A., i, 189.
- velocity of inversion of (v. LIPPMANN), A., ii, 89 ; (DUANE), A., ii, 440 ; (EULER), A., ii, 441.
- velocity of inversion of, in presence of methyl acetate (COPPADORO), A., ii, 544 ; (HENRI and BANCELAS), A., ii, 647.
- influence of the nature and intensity of light on the inversion of, by mineral acids (GILLOT), A., i, 127.
- action of invert sugar on the inversion of (HENRI), A., i, 438.
- behaviour of aqueous solutions of, towards strontia at 125-128° (SCHÖNE and TOLLENS), A., i, 128.
- influence of, on the conductivities of solutions of potassium chloride, hydrogen chloride, and potassium hydroxide (MARTIN and MASSON), T., 707 ; P., 1901, 91.
- rapid estimation of, in beets (HILTNER and THATCHER), A., ii, 535.
- Scheibler's method for the estimation of, in beets (HERZFELD), A., ii, 426.
- estimation of, in condensed milk (S. H. R., and C. N. RIIBER), A., ii, 355.
- Sugar** from the hydrolysis of flicitannic acid (REICH), A., i, 212.
- formation of, in liver cells (BIAL), A., ii, 608.
- nature of the, in blood, muscle, and urine (PAVY and SIAU), A., ii, 257.
- quantity of, formed, after feeding with various proteids (BENDIX), A., ii, 258, 563.
- effects of the increased consumption of (v. BUNGE), A., ii, 458.
- as food for cattle (LEHMANN), A., ii, 415.
- as food for pigs (KLEIN), A., ii, 416.
- Sugar formation** from fat (HARTOGH and SCHUMM), A., ii, 176.

- Sugar, invert**, action of, on the inversion of sucrose by sucrase (HENRI), A., i, 438.  
 estimation of, volumetrically (STOLLE), A., ii, 286.
- Sugars** from cellulose (FENTON), P., 1901, 166.  
 search for, in the products of the hydrolysis of wood of trees (STORER), A., i, 67.  
 fermentation of, by *Bacillus coli communis* and allied organisms (HARDEN), A., ii, 410.  
 fermentation experiments with various yeasts and (LINDNER), A., ii, 182, 263.  
 glycolytic decomposition of, in blood (PORTIER), A., ii, 116.  
 carbamide derivatives of (SCHOORL), A., i, 258.  
 compounds of, with 2:3-diaminobenzoic acid (SCHILLING), A., i, 385.  
 of the blood (LÉPINE and BOULUD), A., ii, 610.  
 new reaction of (SOLLMANN), A., ii, 535.  
 colour reactions of (NEUBERG), A., ii, 286.  
 detection of amino-derivatives of (STUDEL), A., i, 674.  
 detection of, in urine (OFFER), A., ii, 354; (RIEGLER), A., ii, 426.  
 Neumann's modification of Fischer's phenylhydrazine test for, in urine (MARGULIES), A., ii, 135.  
 detection of glycurone and glycuronic acid in (NEUBERG), A., i, 66.  
 estimation of, by Fehling's solution (UTZ), A., ii, 205; (SOLTSIEN), A., ii, 286.  
 estimation of, by Kjeldahl's method (WOY), A., ii, 286.  
 estimation of reducing, in blood (MEILLÈRE and CHAPELLE), A., ii, 354.  
 estimation of, in swedes (COLLINS), A., ii, 583.  
 estimation of, in urine (PATEIN), A., ii, 355.  
 estimation of, in urine by Lehmann's method (GOETZEL-ALBERS), A., ii, 355.  
 estimation of small amounts of, in urine (RAIMANN), A., ii, 582.  
 estimation of, in vinous products (BERNARD), A., ii, 355.  
 separation of glycuronic acid from (NEUBERG), A., i, 66.
- Sulphammonium**, preparation and properties of (MOISSAN), A., ii, 234.
- p*-**Sulphanilic acid**, acidimetric value of (MASSOL), A., i, 532.
- 5-Sulphanilino-7-methylnaphthaphenazonium-3-sulphonic acid**, 9-chloro- (KEHRMANN and MÜLLER), A., i, 419.
- 4-Sulphanilino-1:2-naphthaquinone-6-sulphonic acid**, sodium salt (KEHRMANN and MÜLLER), A., i, 420.
- 5-*p*-Sulphobenzeneazo-2-hydroxy-*m*-tolualdehyde**, sodium salt (BORSCHÉ and BOLSER), A., i, 573.
- o*-Sulphobenzoic acid**, preparation of (KRANNICH), A., i, 153.  
*p*-nitro-, *s*-chloride, esters, sulphone-fluorescein, anilide and anil of (ENDERSON), A., i, 208.
- o*-Sulphobenzoic chlorides**, and *p*-nitro-, action of, on carbamide (HOLMES), A., i, 271.  
 as a test for albumin in urine (PRAUM; ROCH), A., ii, 710.
- o*-Sulphomercuribenzoic acid** and its sodium salt (PESCI), A., i, 624.
- Sulphones**, aromatic, new synthesis of (ÜLLMANN and PASDERMAJIAN), A., i, 383.
- Sulphones**. See also :—  
 Acetophenonedisulphone.  
 $\beta$ -Amylsulphone- $\alpha$ -ethylisocrotonic acid.  
 $\beta$ -Anthraquinonesulphone-*n*-heptylamide.  
 $\beta$ -Anthraquinonesulphonemethylanilide.  
 Benzalsultim.  
 7-Benzenesulphonoxycoumarone-4-carboxylic acid.  
 Benzophenonedisulphone.  
 Benzyltolylbenzenesulphonamide.  
 $\beta$ -Diamylsulphonebutyric acid.  
 $\beta$ -Diamylsulphone- $\alpha$ -mono- and -diethylbutyric acids.  
 $\beta$ -Diamylsulphone- $\alpha$ -mono- and -dimethylbutyric acids.  
 $\gamma$ -Diamylsulphonevaleric acid.  
 $\beta$ -Dibenzylsulphonebutyric acid.  
 $\beta$ -Dibenzylsulphone- $\alpha$ -mono- and -diethylbutyric acids.  
 $\beta$ -Dibenzylsulphone- $\alpha$ -mono- and -dimethylbutyric acids.  
 $\gamma$ -Dibenzylsulphonevaleric acid.  
 $\beta$ -Diethylsulphone- $\alpha$ -diethylbutyric acid.  
 $\beta$ -Diethylsulphone- $\alpha$ -dimethylbutyric acid.  
 Diethylsulphonediphenylmethane.  
 $\beta\beta$ -Diethylsulphone- $\gamma$ - and - $\delta$ -methylpentane- $\delta$ - and - $\gamma$ -ones.  
 $\beta\beta$ -Diethylsulphonepentane- $\gamma$ -one.  
 Diethylsulphone- $\alpha$ -phenylethane.  
 $o$ -Dihydroxydiphenylsulphone.  
 Dinaphthylsulphonebisdiazo-diphenyl and -ditolyl.

**Sulphones.** See:—

- Diphenylsulphone.  
 Diphenylsulphonebisdiazo-diphenyl and -ditolyl.  
 $\beta$ -Diphenylsulphone- $\alpha$ -ethylbutyric acid.  
 $\beta$ -Diphenylsulphone- $\alpha$ -methylbutyric acid.  
 $\gamma$ -Diphenylsulphonevaleric acid.  
 Disulphones.  
 Di-*p*-tolylsulphone.  
 Ditolylsulphonebisdiazo-diphenyl and -ditolyl.  
 Di-*p*-tolylsulphonchydroxylamine.  
 Di-*p*-tolylsulphonemethylamine.  
 2-Hydroxydiphenylsulphone.  
 Methylsulphonetetrazole.  
 $\beta$ -Methyl- $\gamma\gamma\zeta$ -tetraethylsulphone-heptane.  
 $\alpha$ -Phenolsulphonebenzoic chloride.  
 Phenyl-*p*-amino-*o*-tolylsulphone.  
 $\alpha$ -Phenyl- $\gamma$ -diethylsulphonebutane- $\alpha$ -one.  
 Phenyl-*p*-nitro-*o*-tolylsulphone.  
 $\alpha$ -Phenylsulphonebenzoic acid.  
 Phenyl-*o*-tolylsulphone.  
 "Saccharin."  
 Tetraethyldisulphonetetrasulphide.  
 $\beta\beta\gamma\gamma$ -Tetraethylsulphonebutane.  
 $\beta\beta\epsilon\epsilon$ -Tetraethylsulphonehexane.  
 $\beta\beta\delta\delta$ -Tetraethylsulphonepentane.  
 $p$ -Tolylaminophenylsulphone.  
 $p$ -Tolylsulphoned- $\beta$ -naphthoxyethylamide.  
 $p$ -Tolylsulphonecarbinol.  
 $p$ -Tolylsulphonecarbinylaniline.  
 $p$ -Tolylsulphonediethylamine.  
*cyclo-o*-Xylylene-1:3-disulphone-2-dimethylmethylene.  
*cyclo-o*-Xylylene-1:3-disulphone-2-phenylmethylene.  
**Sulphonic acids**, isolation of, by vacuum distillation (KRAFFT and WILKE), A., i, 74.  
 rate of hydrolysis of (CRAFTS), A., ii, 444.  
 salts, compounds of, with hydrogen fluoride (WEINLAND and KAPPELLER), A., i, 309.  
**Sulphonic chlorides, aromatic**, action of, on carbamide (REMSEN and GARNER), A., i, 270.  
 action of, on thiocarbamide (REMSEN and TURNER), A., i, 270.  
**Sulphophenylglycine-1-carboxylic acids**, 4- and 5-, and their salts (VORLÄNDER and SCHUBART), A., i, 564.  
**Sulphosalicylic acid** and its nitro-derivative (HIRSCH), A., i, 84.  
 $p$ -**Sulphotolylaniline**, methine compound of (V. MEYER, NACKE, and GMEINER), A., i, 265.

- Sulphur**, irregular distribution of, in pig-iron (BOLLING), A., ii, 124.  
 molecule,  $S_8$ , dissociation of (BILTZ), A., ii, 649.  
 Wohler's blue or green, new mode of formation of (ORLOFF), A., ii, 499.  
 action of ozone on (WEYL), A., ii, 311.  
 loss of, in preparing ash of plants (FRAPS), A., ii, 421.  
**Sulphur compounds**, action of ozone on (WEYL), A., ii, 311.  
**Sulphur monochloride**, action of, on anthracene (LIPPMANN and POLLAK), A., i, 690.  
**Thionyl chloride**, action of lead cyanate on (DIXON), T., 551; P., 1901, 51.  
 use of, for the preparation of chlorides of organic acids (MEYER), A., i, 628.  
**Sulphuryl chloride**, hydrate of (v. BAeyer and VILLIGER), A., ii, 311; (CARRARA), A., ii, 549.  
**Sulphur perfluoride**, action of the silent electric discharge on (BERTHELOT), A., ii, 15.  
**Sulphuryl fluoride**, preparation and properties of (MOISSAN and LEBEAU), A., ii, 233.  
 dioxide, latent heat of evaporation of (CROMPTON), P., 1901, 62.  
 action of, on aqueous solutions of potassium ferro- and ferri-cyanide (MATUSCHEK), A., i, 635.  
 trioxide and its dimeric form (ODDO), A., ii, 650.  
 physical constants of (SCHENCK), A., ii, 380.  
**Sulphurous acid**, estimation of, in wines (PATUREL), A., ii, 628.  
**Sulphuric acid**, distribution of, in the atmosphere (OST), A., ii, 15.  
 preparation of, for use in acidimetry (KOHN), A., ii, 190; (MEADE), A., ii, 342.  
 absorption of water vapour by (BUSNIKOFF), A., ii, 58, 496.  
 depression of the freezing point in solutions containing hydrochloric acid and (BARNES), A., ii, 304.  
 anhydrous, action of, on dry potassium persulphate (BACH), A., ii, 447.  
 analysis of strong and fuming (RABE), A., ii, 473.  
 detection of added, in wine (CARPENTIERI), A., ii, 191.  
 detection of selenium in (ORLOFF), A., ii, 192; (JOUVE), A., ii, 421.  
 estimation of, in the presence of iron (KÜSTER and THIEL), A., ii, 124.

**Sulphur :—**

- Sulphuric acid**, estimation of, in waters (HARTLEB), A., ii, 627; (WINKLER), A., ii, 628.
- Sulphates**, relative bulk of weak aqueous solutions of certain, and their constituent water (PASEA), A., ii, 227.
- reduction of, by Bacteria (BEYERLING), A., ii, 120; (SALTET and STOCKVIS), A., ii, 265.
- Thiosulphates**, action of hydrogen peroxide on (NABL), A., ii, 94.
- Thiosulphate solution**, standardisation of (PERRIN), A., ii, 474.
- Persulphuric acids** (v. BAeyer and VILLIGER), A., ii, 380.
- See also Caro's acid.
- Persulphates** (NAMIAS), A., ii, 15.
- Sulphur, detection and estimation of**:—
- test for free (STOCK and BLIX), A., ii, 651.
- estimation of, in acetylene and other combustible gases (EITNER and KEPPELER), A., ii, 689.
- estimation of, in commercial benzene intended for enriching illuminating gas (IRWIN), A., ii, 473.
- estimation of, in bitumen, coal, pyrites, roasted ores, &c. (PELLET), A., ii, 622.
- estimation of, in iron and steel (NOYES and HELMER), A., ii, 687.
- estimation of, in wrought iron and steel (AUCHY), A., ii, 420.
- estimation of, in oils (JEAN), A., ii, 687.
- estimation of, as sulphides, hydro-sulphides, polysulphides, and thio-sulphates in solutions and mineral waters (GAUTIER), A., ii, 277.
- Sulphur-selenium-tellurium group**, replacements in the (KRAFFT and STEINER), A., ii, 235.
- Sumach**, analysis of (SESTI), A., ii, 708.
- Sunflower oil** (WILEY), A., ii, 336; (JEAN), A., ii, 483.
- plant. See Agricultural Chemistry.
- Superphosphate**. See under Phosphorus and Agricultural Chemistry.
- Supersaturation**. See under Solutions.
- Suprarenal capsules**, physiology of (STREHL and WEISS), A., ii, 612.
- extracts, substances which lower blood-pressure in (LEVIN), A., ii, 256; (HUNT), A., ii, 259.
- physiological action of (LANGLEY), A., ii, 673.
- glands, active principle of the (ALDRICH), A., ii, 564.
- complete removal of the (MOORE and PURINTON), A., ii, 406.

- Suprarenals**, blood of animals deprived of their (LEVIN), A., ii, 256, 518.
- Surface tension**, connection between, and solubility (HULETT), A., ii, 493.
- use of the method of counting drops for the measurement of (GUYE and PERROT), A., ii, 374.
- of hydrogen (DEWAR), A., ii, 597.
- of liquid air (GRUNMACH), A., ii, 646.
- of liquid precipitates (QUINCKE), A., ii, 646.
- of some essential oils (JEANCARD and SATIE), A., i, 394.
- Sweat**, composition of (CAMERER), A., ii, 459.
- human, cryoscopy of (ARDIN-DELTEIL), A., ii, 67.
- Swedes**. See Agricultural Chemistry.
- Sylvanite** from Colorado (PALACHE), A., ii, 109.
- from Western Australia (KRUSCH), A., ii, 393.
- See also Tellurides.
- Synchysite** from Narsarsuk, South Greenland (FLINK), A., ii, 663.
- Syngenite**, formation of, at 25° (VAN'T HOFF and WILSON), A., ii, 249.
- Syntonins**, albumins, albumoses, and peptones of muscular tissue, differentiation between (BILTÉRYST), A., ii, 632.

**T.**

- Taka-diastase**, action of, on starch solutions, and reversed ferment action (HILL), P., 1901, 184.
- Tan liquor**, estimation of tannic acid, organic and mineral acids in (JEAN), A., ii, 294.
- Tannase** (FERNBACH; POTTEVIN), A., i, 179.
- Tannic acid**, use of, for the estimation of alkaloids in chemico-toxicological analysis (KIPPENBERGER), A., ii, 79.
- Tannin** from *Catha edulis* (BEITTER), A., ii, 268.
- of elder tree bark (MALMÉJAC), A., ii, 572.
- $C_{22}H_{20}O_{10}$ , and its bromo-, acetyl, and benzoyl derivatives from *Sequoia gigantea* (HEYL), A., i, 648.
- estimations, new (SPECHT and LORENZ), A., ii, 294.
- Tanning materials**, analysis of (SESTI; SPICA), A., ii, 708.
- Tannoform**,  $CH_2(C_{22}H_{19}O_{10})_2$  (HEYL), A., i, 648.
- d-Tartaric acid**, action of formaldehyde on (ALBERDA VAN EKENSTEIN), A., i, 120.

- d-Tartaric acid**, conversion of, into oxalacetic acid (WOHL and OESTERLIN), A., i, 365.  
and citric acid, best tests for (PARIS), A., ii, 206.  
estimation of, in presence of oxalic acid (PALLADINI), A., ii, 135.
- d-Tartaric acid**, salts, influence of molybdates and tartrates on the specific rotation of (ITZIG), A., i, 448.  
potassium hydrogen salt (*cream of tartar*), analysis of commercial (QUANTIN), A., ii, 584.  
titanium salts (ROSENHEIM and SCHÜTTE), A., ii, 246.
- d-Tartaric acid**, esters, influence of solvents on the rotation of (PURDIE and BARBOUR), T., 971; P., 1901, 158.  
ethyl ester, influence of solvents on the rotation of (PATTERSON), T., 167, 477; P., 1900, 176; 1901, 40.  
molecular-solution-volume of (PATTERSON), T., 214, 482; P., 1900, 177; 1901, 41.  
ethyl *sec*-octyl ester and its dibenzoyl and diacetyl derivatives (MCCRAE), T., 1103; P., 1901, 186.  
methyl and ethyl esters, preparation of, and rotation of the methyl ester (PATTERSON and DICKINSON), T., 280; P., 1901, 4.
- Racemic acid**, rubidium salt (WYROUBOFF), A., i, 666.
- Tautocinchonine**. See under Cinchonine.
- Tautomeric phenomena**, explanation of (RABE), A., i, 33.
- Tautomerism** of metallic derivatives of organic amides (TITHERLEY), T., 407; P., 1901, 31.  
of *o*-benzoylbenzoic acid (HALLER and GUYOT), A., i, 146.  
of phloroglucinol ethers, influence of the substituting radicles on the (KAUFLE), A., i, 207.  
occurring amongst the thiocyanates of electro-negative radicles (DIXON), T., 541; P., 1901, 50.
- Tea**, black, rôle of oxydase in the preparation of (ASO), A., ii, 679.  
leaves, localisation of caffeine in (SUZUKI), A., ii, 680.
- Tecomin**, the colouring matter of *Bignonia Tecoma* (LEE), T., 284; P., 1901, 4.
- Tellurium** from Hannan's district, Western Australia (MACIVOR), A., ii, 167.  
atomic weight of (STEINER), A., ii, 236.
- Tellurium**, preparation of large quantities of (MATTHEY), A., ii, 447.  
refractive power of, in its compounds (PELLINI and MENIN), A., ii, 94.
- Tellurium compounds**, physiological and toxicological effects of (MEAD and GIES), A., ii, 261.
- Tellurium caesium fluoride** (WELLS and WILLIS), A., ii, 652.  
hydride. See Hydrogen telluride.
- Tellurides** from Colorado (PALACHE), A., ii, 109.  
from Cripple Creek and Coolgardie (RICKARD), A., ii, 663.  
from Western Australia (KRUSCH), A., ii, 393; (CARNOT), A., ii, 515.  
See also Calaverite, Coolgardite, Petzite, and Sylvanite.
- Telluric acid** (GUTHRIE), A., ii, 501; (MYLIUS), A., ii, 550.  
crystalline form of (BRUNCK), A., ii, 649.  
compounds of, with arsenates, iodates, and phosphates (WEINLAND and PRAUSE), A., ii, 599.
- alloTelluric acid** (MYLIUS), A., ii, 550.
- Tellurium aromatic compounds** (ROHRBAECH), A., i, 273.
- Ditelluro-anisyl** trisulphide and -phenetyl tri- and penta-sulphides (ROHRBAECH), A., i, 273.
- Telluroacetylcumene**, dichloro- (ROHRBAECH), A., i, 274.
- p-Telluro-anisole** and -phenetole (ROHRBAECH), A., i, 273.
- Telluromethyl  $\psi$ -cumyl,  $\alpha$ -naphthyl, p-phenetyl, and xylyl ketones**, dichloro- (ROHRBAECH), A., i, 274.
- Tellurium**, estimation of, gravimetrically (GUTHRIE), A., ii, 687.
- Tellurium-sulphur-selenium group**, replacements in the (KRAFFT and STEINER), A., ii, 235.
- Temperature**. See Thermochemistry.
- Termierite** from Miramont (FRIEDEL), A., ii, 397.
- $\Delta^{1,4}$ -Terpadiene-3-oxime-6-one** (*nitroso-thymol*) (KREMERS and BRANDEL), A., i, 729.
- Terpene**,  $C_{11}H_{17}$ , from pulegone and magnesium methiodide (GRIGNARD), A., i, 681.
- Terpenes** from cascarilla oil (FENDLER), A., i, 219.  
from sandarac resins (HENRY), T., 1149; P., 1901, 187.  
action of Denigès' acetone reagent on (GLÜCKSMANN), A., ii, 202.
- Terpene series**, elimination of water, halogen hydride, and ammonia in the (SEMMLER), A., i, 330.

- Terpenoid compounds**, genesis of, in plants (CHARABOT), A., ii, 34.  
*role* of the chlorophyll function in the genesis of, in plants (CHARABOT), A., ii, 183.  
 formation of, in the geranium (CHARABOT), A., i, 38.
- Terpenylic acid** (PERKIN), P., 1900, 215.
- Terpinene and Terpineneoxideoxime** and its isomeride (SEMMLER), A., i, 331.
- Terpineol**, new preparation of (GENVRESSE), A., i, 280.
- l*-**Terpineol** and its derivatives (SCHIMMEL & Co.), A., i, 395.
- Tetanus** poison, chemical nature of the (HAYASHI), A., i, 354.  
 toxin and antitoxin, injection of, into the sub-arachnoid space (RANSOM), A., ii, 118.
- Tetracetoxydiphenylene oxide** (BREZINA), A., i, 701.
- Tetracetyl bromodextrose** (FISCHER and ARMSTRONG), A., i, 257; (COLLEY), A., i, 671.
- Tetracetylchloro-dextrose and -galactose** (FISCHER and ARMSTRONG), A., i, 257.
- Tetracetyl- $\beta$ -methylgalactoside** (KOENIGS and KNORR), A., i, 370.
- Tetracetyl- $\alpha$ -methylglucoside** (FISCHER and ARMSTRONG), A., i, 257.
- Tetracetyl- $\alpha$ - and - $\beta$ -methyl- and - $\beta$ -ethyl-glucosides** (KOENIGS and KNORR), A., i, 370.
- Tetracetyl- $\beta$ -phenylglucoside and - $\beta$ -naphthylglucoside** (FISCHER and ARMSTRONG), A., i, 672.
- Tetracetyltetramethylene**, *dithio*- (WENZEL), A., i, 403.
- Tetradecanaphthene**, chloro- (MABERY and SIEPLEIN), A., i, 306.
- Tetradecoic anhydride** (*myristic anhydride*) (KRAFFT and ROSINY), A., i, 113.
- Tetradecylacetylene**, amino- and nitro-derivatives, *tetrabromide*, and metallic compounds of (KRAFFT and HEIZMANN), A., i, 110.
- Tetradecylacetylenecarboxylic acid** (*tetradecylpropionic acid*) and its amide and benzoyl derivative, and **Tetradecylacetylenesulphonic acid** (KRAFFT and HEIZMANN), A., i, 110.
- Tetradecylbenzoylacetylene** (KRAFFT and HEIZMANN), A., i, 110.
- Tetraethenyl hexasulphide** (*tetraethyltrisulphide*) and its derivatives, and **Tetraethenyldisulphonetetrasulphide** (FROMM and MÄNGLER), A., i, 184.
- Tetraethyl diarsonium** salts, and compounds of, with mercuric chloride (BIGINELLI), A., i, 20.
- Tetraethyl dicacodylic acid**, compound of, with potassium nitrate (BIGINELLI), A., i, 21.
- $\beta\beta\epsilon\epsilon$ -Tetraethylsulphonehexane** and  **$\beta\beta\delta\delta$ -Tetraethylsulphonepentane** (POSNER), A., i, 15.
- $\beta\beta\gamma\gamma$ -Tetraethylthiolbutane**, and -sulphonebutane (POSNER), A., i, 15.
- Tetrahedrite** from Mount Botes, Hungary (LOCZKA), A., ii, 247.
- $\Delta^1$ -Tetrahydrobenzoic acid**, ethyl ester, action of ethyl diazoacetate on (BRAREN and BUCHNER), A., i, 85.
- Tetrahydrobenzylamine** derivatives (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 691.
- Tetrahydrodiphenylene oxide** and its picrate (HÖNIGSCHMID), A., i, 700.
- Tetrahydronaphthalene**, refraction and dispersion of (PELLINI), A., ii, 365.
- ac*-**Tetrahydro- $\beta$ -naphthylamine**, resolution of (POPE and HARVEY), T., 75; P., 1900, 206.
- d-ac*-**Tetrahydro- $\beta$ -naphthylamine** and its platinichloride, and benzoyl, acetyl, and benzylidene derivatives (POPE and HARVEY), T., 81; P., 1900, 206.
- d*- and *l-ac*-**Tetrahydro- $\beta$ -naphthylamines**, and their *d*- and *l*-bromocamphorsulphonates, hydrochlorides and camphorsulphonates; and their racemisation (POPE and HARVEY), T., 75; P., 1900, 206.
- Tetrahydrophenanthrene**, refraction and dispersion of (PELLINI), A., ii, 365.
- Tetrahydroisophthalic acid** from tetrahydrotrimesic acid (LAWRENCE and PERKIN), P., 1901, 47.
- Tetrahydropyridine** and its aurichloride and benzoyl derivative (PAAL and HUBALECK), A., i, 745.
- Tetrahydroquinoliniumiodoacetic acid**, methyl ester (WEDEKIND), A., i, 640.
- Tetrahydroquinolylacetic acid**, methyl and ethyl esters (WEDEKIND), A., i, 640.
- Tetrahydrothiophentetracarboxylic acid** and dinitrile, *dithio*-, ethyl esters (WENZEL), A., i, 402.
- Tetrahydroic acid** (TAFEL), A., i, 237, 427.
- Tetrahydroxyanthraquinone-3-6-disulphonic acid**, 1:8-diamino-2:4:5:7- (FARBENFABRIKEN VORM. F. BAYER & Co.), A., i, 729.
- Tetrahydro-xylic acid** and its *dibromo*-, and methyl esters, and anilide (LEES and PERKIN), T., 350; P., 1900, 20.
- Tetrahydro-xylic acids**, stereoisomeric (PERKIN and YATES), T., 1379.
- Tetrahydroxymethylantraquinone** (SEEL), A., i, 92.

- Tetraketohyrindacenedicarboxylic acid**, ethyl ester and its sodium salt (EPHRAIM), A., i, 688.
- 2:4:6:4'-Tetramethoxybenzoylacetophenone**, isonitroso- (DILLER and v. KOSTANECKI), A., i, 476.
- 3:4:3':4'-Tetramethoxydiphenyltri-chloroethane** (FEUERSTEIN), A., i, 274.
- 2:4:6:3'-Tetramethoxy-4'-ethoxybenzoylacetophenone** and its isonitroso-derivative (DILLER and v. KOSTANECKI), A., i, 476.
- 3:4:3':4'-Tetramethoxystilbene** (FEUERSTEIN), A., i, 274.
- Tetramethyldiaminocycloheptene** (WILLSTÄTTER), A., i, 224.
- Tetramethyldiaminophenyl-anthranol** and -oxanthranol (HALLER and GUYOT), A., i, 350.
- 4:4'-Tetramethyldiaminotriphenylcarbinol**, ethers of (FISCHER), A., i, 82.
- Tetramethylene glycol**. See *ad*-Butanediol.
- Tetramethylenecarbinol**, preparation and physical properties of (PERKIN), T., 329; P., 1901, 33.
- 3:4-cycloTetramethylene-5-pyrazolone**. See 2-Ketohexahydroindazole.
- Tetramethylenetetracarboxylic acid**, dithio-, and its ethyl ester and salts (WENZEL), A., i, 402.
- 1:2-cycloTetramethyleneumbelliferone** (DIECKMANN), A., i, 542.
- Tetramethylenylmethylamine**. See Methylcyclobutane,  $\omega$ -amino-.
- s-Tetramethyldinitroazoxymethane** (SCHÖFFER), A., i, 495.
- Tetramethylpurone** (TAFEL), A., i, 238.
- 2:2:5:5-Tetramethyl-pyrroline** and -pyrrolidine, and 3-amino-derivative of the pyrrolidine (PAULY and SCHAUM), A., i, 607.
- 1:2:4:5-Tetraphenylhexahydro-1:2:4:5-tetrazine** (RASSOW; RASSOW and LUMMERZHEIM), A., i, 777.
- 1:2:4:5-Tetraphenylcyclopentene** and its chloro-derivative and **1:2:4:5-Tetraphenylcyclopentane** (HENDERSON and CORSTORPHINE), T., 1263; P., 1901, 191.
- Tetraphenylcyclopentenol** and its acetyl and bromo-derivatives (HENDERSON and CORSTORPHINE), T., 1261; P., 1901, 191.
- Tetraphenylcyclopentenolone**, and its oxime, *p*-bromophenylhydrazone, and acetyl derivative, and the action of bromine, phosphorus pentachloride, and alcoholic hydrogen chloride on, and oxidation of (HENDERSON and CORSTORPHINE), T., 1258; P., 1901, 190.
- Tetraphenylphenylenediamines** (HAEUSERMANN), A., i, 229.
- $\alpha\beta\gamma\delta$ -Tetraphenylpiperazine** and its salts, synthesis of (SCHMIDT), A., i, 266, 295.
- Tetraphenyltetrazoline** and  $\alpha$ - and  $\beta$ -dinitro- (BAMBERGER and GROB), A., i, 296.
- Tetrazoditolyldisulphonic acid**, sodium salt, combination of, with  $\beta$ -naphthylethylamine (SEYEWITZ and BLANC), A., i, 621.
- Tetrazole-thiol**, and -sulphonic acid, and Tetrazolol and their salts (FREUND and PARADIES), A., i, 771.
- Tetronic acid**, condensation products of (WOLFF), A., i, 283.
- Thallium rhodium alum** (PICCINI and MARINO), A., ii, 392.
- Thallium chlorobromides** (THOMAS), A., ii, 60, 100, 159, 507.
- iodide and nitrate, formation of mixed crystals of (VAN EIJK), A., ii, 19.
- Thallic thallous nitrate** (WELLS, BEARDSLEY, JAMIESON, and METZGER), A., ii, 653.
- Thallium**, estimation of, volumetrically (MARSHALL), A., ii, 196.
- Thamnolinic acid** from lichens (HESSE), A., i, 150.
- Thebenidine** and its methiodide and platinichloride (VONGERICHTEN), A., i, 341.
- Theine**. See Caffeine.
- Thenardite**, formation of, from mirabilite (SCHEMTSCHUSCHNY and KURNAKOFF), A., ii, 605.
- Theobromine** and the salts it forms (PAUL), A., i, 341.
- synthesis of, from cyanoacetic acid (TRAUBE), A., i, 54.
- influence of, on the excretion of purine substances in urine (KRÜGER and SCHMID), A., ii, 463.
- Theophylline** (4:6-dimethylxanthine), synthesis of, from cyanoacetic acid (TRAUBE), A., i, 54.
- THERMOCHEMISTRY** :—
- of very dilute solutions (v. STEINWEHR), A., ii, 641.
- of the ammonio-aluminium chlorides (BAUD), A., ii, 161, 224, 303.
- of the hyper-acids of cerium, thorium, and zirconium (PISSARJEWSKY), A., ii, 56.
- Thermochemical researches** on the principal opium alkaloids (LEROY), A., ii, 6.
- Thermodynamical laws**, deductions based on (LEWIS), A., ii, 10, 639.
- observations (SAND), A., ii, 303.

## THERMOCHEMISTRY :—

**Thermodynamical** potential, development of the, in terms of  $T$  and  $p$  in the case of compound components (VAN LAAR), A., ii, 224.

**Thermodynamics** of solutions of chlorine and hydrogen chloride in water (MELLOR), T., 235.

**Thermoelectric behaviour** of some oxides and metallic sulphides (VAN AUBEL), A., ii, 222.

**Heat**, action of, on the absorption spectra and chemical constitution of saline solutions (HARTLEY), A., ii, 53.

**Thermal capacity**, proposal regarding the definition of (RICHARDS), A., ii, 223.

conductivity, and thermo-electric efficiency of some metals (JAEGER and DIESSELHORST), A., ii, 84.

pressure, new conception of (LEWIS), A., ii, 10, 639.

properties of *isopentane* compared with those of *n-pentane* (ROSE-INNES and YOUNG), A., ii, 644.

**Temperature**, influence of, on the dissociation of copper-ammonia sulphate (DAWSON and McCRAE), T., 1072; P., 1901, 178.

influence of, on the velocity of reaction between ethyl alcohol and hydrochloric acid (PRICE), T., 303; P., 1900, 185.

of liquids in relation to viscosity and chemical constitution (BATSCHEWITSKY), A., ii, 645.

change of, attending the solidification of melted organic substances (PAWLEWSKI), A., ii, 85.

influence of, on the specific rotation of sucrose (SCHÖNROCK), A., ii, 287.

of the marmot (PEMBREY), A., ii, 608.

lowering of, and loss of water in *Stentor* and *Spirogyra* (GREELEY), A., ii, 668.

influence of, on the energy of the decomposition of proteid in germination (PRIANISCHNIKOFF), A., ii, 120.

**Temperature changes** of the specific volumes of liquid and saturated vapour, relation between the (VAN DER WAALS), A., ii, 305.

**Temperature coefficient** of the susceptibility of some salt solutions of the iron group (MOSLER), A., ii, 643.

**Critical constants.** See under Critical,

## THERMOCHEMISTRY :—

**Critical state**, the (KANONNIKOFF), A., ii, 438.

**Thermometry**, accurate (MARCHIS), A., ii, 491.

**Thermometer**, air, at high temperatures (HOLBORN and DAY), A., ii, 84.

**Thermostat**, electrical (YOUNG), A., ii, 491.

**Heat conductivity** of some metals and non-metals (JAEGER and DIESSELHORST; RIETZSCH), A., ii, 84.

**Molecular heats** of compounds, and the law of Neumann-Joule-Kopp (VAN AUBEL), A., ii, 226.

**Specific heat** of alloys (MAZZOTTO), A., ii, 492.

of some carbon compounds (LUGNIN), A., ii, 145.

molecular, of dissociable gaseous compounds (PONSOT), A., ii, 84.

of a gaseous mixture of compounds in chemical equilibrium (PONSOT), A., ii, 302.

of metals, determination of the, by their rate of cooling (SERDOBINSKY and EMELIANOFF), A., ii, 303.

of some organic nitrogenous compounds (KAHLENBERG), A., ii, 492.

of solutions (PUSCHL), A., ii, 224.

of aluminium ammonio-chloride,  $Al_2Cl_6.18NH_3$  (BAUD), A., ii, 303.

of ethylene glycol (DE FORCRAND), A., ii, 224.

of hydrogen (DEWAR), A., ii, 597.

of molybdenum and tungsten (DEFACQZ and GUICHARD), A., ii, 659.

of fats (VANDEVYVER-GRAU), A., ii, 46.

**Heat of dilution**, calculation of, according to Kirchhoff's formula (JÜTTNER), A., ii, 592.

**Heat of fermentation** of maltose (BROWN), A., ii, 304.

**Heat of formation** of electrolytes, calculated from their decomposition-potentials (GARRARD), A., ii, 55.

**Latent heat** of liquid and solid hydrogen (DEWAR), A., ii, 597.

**Latent heat of fusion** of antimony bromide and chloride (TOLLOZKO), A., ii, 437.

of some elements, calculation of the (DE FORCRAND), A., ii, 641.

of ethylene glycol (DE FORCRAND), A., ii, 224.

**Temperature of ignition** of phosphorus (EYDMANN), A., ii, 312.



THERMOCHEMISTRY:—*Heat of combustion*=*c.*; *of formation*=*f.*; *of hydration*=*h.*; *of neutralisation*=*n.*; *of oxidation*=*o.*; *of substitution*=*sb.*; *of vaporisation*=*v.*

**Heat of substitution** of oxygen for sulphur in alkyl mercaptans and sulphides (BERTHELOT), A., ii, 147.

**Latent heat of vaporisation** of some carbon compounds (LUGININ), A., ii, 145.

of some elements, calculation of the (DE FORCRAND), A., ii, 641.

of liquids (CROMPON), P., 1901, 61.

of some organic nitrogenous compounds (KAHLENBERG), A., ii, 492.

of steam from saturated salt solutions (TROUTON), A., ii, 592.

**Thermochemical data** of hydrochloric acid (*f.*) (AKUNOFF), A., ii, 82.

of some slightly soluble metallic salts (*f.*) (KLEIN), A., ii, 225.

of aluminium oxide and its hydrate (*f.*) (BERTHELOT), A., ii, 388.

on alloys of copper and zinc (*f.*) (BAKER), A., ii, 303.

of iron nitride (*f.*) (FOWLER and HARTOG), T., 299; P., 1900, 210.

of silver amalgams (*f.*) (BERTHELOT), A., ii, 156.

of acetals and their isomerides (*f.*) (DELÉPINE), A., i, 314.

of acetals of monohydric alcohols (*c.* and *f.*) (DELÉPINE), A., ii, 6.

of alkyl mercaptans and sulphide (*c.* and *f.*) (BERTHELOT), A., ii, 146.

of monosubstituted benzoic acids (*f.*) (MASSOL), A., i, 323.

of *o.*- and *p.*-bromobenzoic acids (*n.*) and of the sodium salts (*f.*) (MASSOL), A., i, 323.

of *o*-chlorobenzoic acid (*n.*) (MASSOL), A., ii, 226.

of sodium *o*-chloro- and *o*-iodobenzoate (*f.*) (MASSOL), A., ii, 226.

of chloroanilic acid (*c.*, *f.*, *sb.*) (VALEUR), A., i, 154.

of ethylene glycol (*h.* and *v.*) (DE FORCRAND), A., i, 307.

of ethylene glycol formal and acetal, *i*-erythritol diformal and diacetal, and *d*-mannitol triformal and triacetal (*c.* and *f.*) (DELÉPINE), A., i, 4.

of chloro-derivatives of quinol and quinone (*c.*, *f.*, *o.*, *sb.*) (VALEUR), A., i, 155.

of *p*-sulphanilic acid (*f.*, *h.*, *n.*) (MASSOL), A., i, 532.

of celluloses (*c.*) (VIGNON), A., i, 16.

**Thermochemical data** of glucosides (*c.* and *f.*) (FISCHER and v. LOEBEN), A., ii, 225.

of oils (*c.*) (SHERMAN and SNELL), A., ii, 430.

**Heat of solution** (HOLSBOER), A., ii, 226.

relation between solubility and (CAMPETTY), A., ii, 642.

determination of (COHEN), A., ii, 147.

of the ammonio-aluminium chlorides (BAUD), A., ii, 224.

of cadmium sulphate (HOLSBOER), A., ii, 226.

of neodymium chloride and its hydrates (MATIGNON), A., ii, 602.

of potassium hydroxide and its hydrates (DE FORCRAND), A., ii, 593.

of allotropic modifications of silver (BERTHELOT), A., ii, 156.

of sodium hydroxide and its hydrates (DE FORCRAND), A., ii, 593.

of thorium oxides in nitric acid (PISSARJEWSKY), A., ii, 56.

of uranium nitrate (OECHSNER DE CONINCK), A., ii, 105.

of *o.*- and *p.*-bromobenzoic acids (MASSOL), A., i, 323.

of *o*-chloro- and *o*-iodobenzoic acids (MASSOL), A., ii, 226.

of resorcinol in ethyl alcohol (SPEYERS and ROSELL), A., ii, 147.

of *p*-sulphanilic acid (MASSOL), A., i, 532.

**Thiocarbamide**, condensation of, with isodialuric acid (v. VOGEL), A., i, 262.

action of aromatic sulphonie chlorides on (REMSEN and TURNER), A., i, 270.

**Thiocarbamides**, action of halogens on (HUGERSHOFF), A., i, 757.

**Thiocarbimides**, action of, on dithiocarbazine acids (BUSCH and WOLPERT), A., i, 233.

action of, on thiol acids (WHEELER and MERRIAM), A., i, 514.

**diThiocarbonic acid**, stereoisomerism of the hydrazones of the esters of (BUSCH), A., i, 430.

imino-, esters (DELÉPINE), A., i, 518.

**Thiocyanic acid**, esters, isomerism of (BERTHELOT), A., i, 203.

action of, on thiol acids (WHEELER and MERRIAM), A., i, 514.

mesityl and  $\omega$ -*m*-xylyl esters (WHEELER and JOHNSON), A., i, 707.

- Thiocyanic acid**:—  
**Thiocyanates**, action of reducing gases on (CONROY, HESLOP, and SHORES), A., i, 373.  
 yellow colouring matters from (GOLDBERG), A., i, 193, 516, 677.  
 of electro-negative radicles, tautomerism among (DIXON), T., 541; P., 1901, 50.  
 double, and the ferric thiocyanate reaction (ROSENHEIM and COHN), A., i, 455.
- Thiocyanogen** and  $\psi$ -**Thiocyanogen** (GOLDBERG), A., i, 193, 516, 677.
- Thioncarbamie esters**, disubstituted, molecular rearrangement of (WHEELER and DUSTIN), A., i, 24.
- Thionyl chloride**. See under Sulphur.  
 thiocyanate (DIXON), T., 551; P., 1901, 51.
- Thio-oxyarsenic acids**, preparation of (McCAY), A., ii, 95; (WEINLAND and LEHMANN), A., ii, 313; (McLAUCHLAN), A., ii, 552.
- Thiophenidene-aminothiazoles**, *p*-bromoaniline, and *p*-toluidine (HANTZSCH and WITZ), A., i, 401.
- Thiopyrine**  $\sharp$  (*thioantipyrine*) and its hydrochloride and analogue (MICHAELIS and BINDEWALD), A., i, 52.
- Thiosinamines**, halogen-substituted (DIXON), T., 553; P., 1901, 49.
- Thiosulphates**. See under Sulphur.
- Thiosulphonic acids** of aromatic amines and *m*-diamines (CLAYTON ANILINE Co.), A., i, 694.
- Thiourea-amidines** (WHEELER), A., i, 487.
- Thomsonite** from Golden, Colorado (PATTON), A., ii, 455.
- Thorium**, chemistry of (BRAUNER), P., 1901, 67.
- Thorium caesium chlorides** (WELLS and WILLIS), A., ii, 660.  
 hydride and nitride, composition of (MATIGNON and DELÉPINE), A., ii, 106.  
 nitride (MATIGNON), A., ii, 61.  
*metanitride* (KOHLSCHUTTER), A., ii, 599.  
 double nitrates (MEYER and JACOBY), A., ii, 510.  
 thermochemistry of the hyper-acids of (PISSARJEWSKY), A., ii, 56.
- Metathoric acid** and **Metathorium-oxychloride** (STEVENS), A., ii, 391.
- Metathorium oxides** (STEVENS), A., ii, 391; (WYROUBOFF), A., ii, 604.
- L-Threose** and its oxazone and phenylbenzylhydrazone (RUFF and KÖHN), A., i, 449.
- Thujene** and *iso***Thujene** (TSCHUGAEFF), A., i, 38, 601.
- Thujoleacetic acid** and its ethyl ester, and *iso***Thujoleacetic acid** (WALLACH and LEIMBACH), A., i, 157.
- Thujonoxyglycuronic acid**, potassium salt (HILDEBRANDT), A., ii, 181.
- Thyme**, oil of (JEANCARD and SATIE), A., i, 733.
- Thymine**, synthesis of (FISCHER and ROEDER), A., i, 294.  
 constitution of (STEUDEL), A., i, 108, 434.
- Thymol**, displacement of alkyl groups from, by nitration (LARTER), P., 1901, 183.  
 sodium derivative, action of ethyl chlorofumarate and of ethyl phenylpropionate on (RUHEMANN), T., 918; P., 1901, 155.
- Thymol**, trinitro-, acetyl, benzoyl, and ethyl derivatives, and phenylhydrazine salt of (MALDOTTI), A., i, 80.  
 nitroso-. See  $\Delta^{1,4}$ -Terpadiene-3-oxime-6-one.
- Thymoquinone** and **Thymoquinol** in wild bergamot oil (BRANDELAND KREMERS), A., i, 598.
- Thymoquinone**, dibromo-, derivatives of (HOFFMANN), A., i, 473.
- Thymoquinonebenzoyl- $\alpha$ -naphthylhydrazone** (McPHERSON and GORE), A., i, 572.
- Thymoquinonemalonic acid**, bromo-, ethyl ester (HOFFMANN), A., i, 473.
- $\beta$ -Thymoxycinnamic acid**, and its silver salt, and ethyl ester (RUHEMANN), T., 918; P., 1901, 155.
- Thymoxyfumaric acid** and its ethylester (RUHEMANN), T., 919; P., 1901, 155.
- 1-Thymoxymethylbenzoxazole** (COHN), A., i, 752.
- 2-m-Thymoxymethyl-5-ethoxybenzimidazole** and its salts (COHN), A., i, 352.
- $\beta$ -Thymoxystyrene** (RUHEMANN), T., 919; P., 1901, 155.
- Thymus** and **Thyroid glands**. See under Gland.
- Thyreo-globulin** (OSWALD), A., ii, 461; (BLUM), A., ii, 671.
- Tiglic acid**. See Pentenoic acid.
- Tiliadin** from the bark of lime trees (BRÄUTIGAM), A., i, 93.
- Tin** from Western Australia (SIMPSON), A., ii, 454.  
 enantiotropy of (COHEN), A., ii, 106, 244.
- Tin alloys** with copper, results of chilling (HEYCOCK and NEVILLE), A., ii, 508.  
 with copper and with zinc, density of (MAEY), A., ii, 655.

- Tin salts**, studies on solutions of (YOUNG), A., ii, 318, 390, 603.
- Stannic bromide**, dissociating power of (TOLLOZKO), A., ii, 437.
- Stannous salts**, studies on solutions of (YOUNG), A., ii, 603.
- chloride, course and kinetics of the reaction between oxygen and (YOUNG), A., ii, 603.
- electrical conductivity of solutions of, and hydrochloric acid (YOUNG), A., ii, 318.
- oxidation of solutions of, by means of free oxygen (YOUNG), A., ii, 390.
- sulphide, action of potassium and sodium hydroxides on (PERKIN), A., ii, 479.
- Tin, estimation of:**—
- analysis of (MAINSBRECQ), A., ii, 41.
- precipitation of, from its sulphy-salts, and separation of, electrolytically, from antimony (OST and KLAPPROTH), A., ii, 695.
- detection of (SCHMAYOLLA), A., ii, 580.
- estimation of, volumetrically, by means of stannous chloride (ZENGEIS), A., ii, 533.
- Tin-plated wares**, analysis of (MAINSBRECQ), A., ii, 41.
- Tissues**, chemical nature of (ÉCARD), A., ii, 563.
- chemico-physical relations of juices and (OKER-BLOM), A., ii, 326, 520.
- proteolytic enzymes in (HEDIN and ROWLAND), A., ii, 462.
- formation and decomposition of fat in the (HESLER), A., ii, 461.
- connective, silicic acid in (SCHULZ), A., ii, 257.
- elastic, composition of (VANDERGRIFT and GIES), A., ii, 461.
- nervous. See Nervous.
- Titaniferous iron ores**, separation of, in basis igneous rocks (VOGT), A., ii, 63, 319.
- Titanium**, quadrivalent, double compounds of (ROSENHEIM and SCHUTTE), A., ii, 244.
- Titanium tetrachloride**, ammonio and pyridine salts of (ROSENHEIM and SCHUTTE), A., ii, 245.
- sulphates (ROSENHEIM and SCHUTTE), A., ii, 245.
- Titanic acid**, estimation of, colorimetrically (BRAKES), A., ii, 285.
- Tobacco**, new alkaloids from (PICTER and ROTSCHY), A., i, 339.
- estimation of nicotine in (TÓTH), A., ii, 363, 708.
- See also Cigar.
- (*Tolyl compounds Me = 1.*)
- Tobacco leaf**, occurrence of paraffins in (THORPE and HOLMES), T., 982; P., 1901, 170; (KISSLING), A., ii, 680.
- Tobacco plant**. See Agricultural Chemistry.
- p*-**Tolacylidenebenzamidine** and its salts, phenylhydrazone, ethiodide and ethyl derivative (KUNCHELL and BAUER), A., i, 758.
- Tolene dinitrites**. See Stilbene, *ω*-dinitro-.
- p*-**Tolenylamidine**, and action of, on ketones (KUNCHELL and BAUER), A., i, 758, 759.
- Tolidine**, *oo*-dichloro- (Cl : Me : NH<sub>2</sub> = 2:3:4) and its hydrochloride and sulphate (COHN), A., i, 638.
- Toluene**, electrolytic oxidation of (MERZBACHER and SMITH), A., i, 134; (PULS), A., i, 318.
- bromination and iodination of (EDINGER and GOLDBERG), A., i, 22, 23.
- chlorination of (WYNNE), P., 1901, 116.
- chlorination of, in presence of the mercury-aluminium couple (COHEN and DAKIN), T., 1119; P., 1901, 91.
- oxidation of (BOEDTKER), A., i, 684.
- iodosulphates, *o*- and *p*- (WEINLAND and STILLE), A., i, 684.
- Toluene**, six dichloro-derivatives, preparation, nitration, oxidation, and sulphonation of (COHEN and DAKIN), T., 1121; P., 1901, 91; (WYNNE), P., 1901, 116.
- 6-chloro-2 3-dinitro- (COHN), A., i, 637.
- o*-nitro-, dielectric constant of (TURNER), A., ii, 54.
- chlorination of (COHN), A., i, 637.
- o*- and *p*-nitro-, condensation of, with ethyl oxalate, and action of sodium ethoxide and amyl nitrite on (LAPWORTH), T., 1272; P., 1900, 109.
- o*-, *m*-, and *p*-nitro-, electrolytic oxidation of (PIERRON), A., i, 685.
- 2:4-dinitro-, condensation products of (THIELE and ESCALES), A., i, 689.
- ω*-dinitro-, and its potassium and silver salts (PONZIO), A., i, 685.
- trinitro*-, additive compounds of, with *α*- and *β*-naphthylamine, and their acetyl derivative (SUDBOROUGH), T., 530; P., 1901, 44.
- 2:3- and 3:4-dinitroso-, nitro-derivatives of (ZINCKE and DROST), A., i, 73.
- Toluenazo dibromophenols** and their acetyl and benzoyl derivatives and ethyl ethers (HEWITT and TERVET), T., 1090; P., 1901, 172.

(Tolyl compounds Me=1.)

- p*-Tolueneazodiacetylsuccinic acid, diethyl ester (BÜLOW and SCHLESINGER), A., i, 98.
- Tolueneazoimides** (*dis-tolueneimides*), *o*- and *p*-, nitro-derivatives of (ZINCKE and DROST), A., i, 73.
- Tolueneazo- $\beta$ -naphthols**, *o*- and *p*-, and their isomerides (BETTI and LEONCINI), A., i, 56.
- m*-Tolueneazo-*o*-nitrophenol and its ethyl ether (HEWITT and LINDFIELD), T., 157; P., 1900, 222.
- Tolueneazo-*o*-nitrophenols**, *o*- and *p*-, and ethyl ethers and acetyl and benzoyl derivatives (HEWITT and LINDFIELD), T., 155; P., 1900, 222; discussion, P., 222.
- Tolueneazophenols**, *o*-, *m*-, and *p*-, action of bromine on (HEWITT and TERVET), T., 1090; P., 1901, 172.
- p*-Tolueneazo-*p*-tolyl-auramine and -leucauramine (MÖHLAU and HEINZE), A., i, 433.
- Toluenediazoaminobenzoic acids**, *o*-, *m*-, and *p*-, and their methyl esters (MEHNER), A., i, 471.
- p*-Toluenediazo-hydroxylaminobenzene (BAMBERGER), A., i, 171.
- p*-Toluenesulphonic acid (v. MEYER, NACKE, and GMEINER), A., i, 264.  
action of, on nitrosobenzene (BAMBERGER and RISING), A., i, 201.  
action of, on  $\beta$ -phenylhydroxylamine (BAMBERGER and RISING), A., i, 202.
- p*-Toluenesulphomorpholinamide (SAND), A., i, 741.
- Toluene-*p*-sulphonic acid**, purification of (KRAFFT and WILKE), A., i, 74.  
aminophenol, *o*- and *p*-amino- and *o*- and *p*-nitro-phenyl esters (BAMBERGER and RISING), A., i, 201.
- Toluene-*p*-sulphonic acid**, and *o*-nitro-, esters and amides of (REVERDIN and CRÉPIEUX), A., i, 686.  
*mono*- and *di*-nitro-derivatives of (REVERDIN and CRÉPIEUX), A., i, 685.
- Toluene- $\omega$ -sulphonic acid** (*benzylsulphonic acid*), *m*-nitro-, and its salts, amide, chloride, and *m*-amino- (PURGOTTI and MONTI), A., i, 21.
- p*-Toluenethiolsulphonic acid, diazoaryl esters (TRÖGER and EWEIS), A., i, 172.
- Toluic acids**, *o*-, *m*-, and *p*-, and their methyl esters, chlorides, amides, and mono- and di-methylamides, action of nitric acid on (VAN SCHERPENZEEL), A., i, 592.
- o*-Toluic chloride and  $\omega$ -chloro- (GOLD-SCHMIDT), A., i, 709.

(Tolyl compounds Me=1.)

- o*-Toluidine, action of acetaldehyde on (EIBNER and PELTZER), A., i, 97.  
action of methylenechlorohydrin on (GRASSI-CRISTALDI and SCHIAVOLENTI), A., i, 55.
- o*-Toluidine, 4-chloro- (COHN), A., i, 637.  
6-chloro-, and its salts (COHN), A., i, 637.
- p*-Toluidine, new synthesis of (JAUBERT), A., i, 320.  
action of chloroacetic acid on (STEPPE), A., i, 139.  
oxidation of (BORNSTEIN), A., i, 375.  
cyanoacetyl derivative of (GROTHE), A., i, 80.
- Toluidines**, *o*- and *m*-, new method of preparing (SABATIER and SENDERENS), A., i, 638.
- Toluidines**, *o*- and *p*-, acetylation of (SUDBOROUGH), T., 537; P., 1901, 45.  
action of, on  $\beta$ -chloroallylthiocarbimide (DIXON), T., 558; P., 1901, 49.  
interaction of, with phenylurethane (DIXON), T., 102; P., 1900, 207.  
chloroacetyl, phenylsulphoneacetyl, *p*-tolylsulphoneacetyl, thiodiglycolyl, sulphonediacyl, and thiocyanacetyl derivatives of (GROTHE), A., i, 79, 80.
- Toluidines**, *o*-, *m*-, and *p*-, action of acetylchloroamino-2:4-dichlorobenzene on (CHATTAWAY and ORTON), T., 465; P., 1901, 39.
- Toluidinoacetic acids**, *o*- and *p*-, and the amide and nitrile of the *o*-acid (STEPPE), A., i, 139.
- p*-Toluidinoanilino-phosphoric acid, ethyl ester, and -phosphoryl chloride (CAVEN), P., 1901, 26.
- m*-Toluidinoazobenzoic acid, methyl ester (MEHNER), A., i, 471.
- o*-Toluidinodiacetic acid, oxidation of (VORLÄNDER and MUMME), A., i, 463.  
action of nitrous acid on (VORLÄNDER and v. SCHILLING), A., i, 463.
- 4-*p*-Toluidino-1-phenylurazole, 5-thio- (BUSCH and GROHMANN), A., i, 617.
- p*-Toluidinophosphoryl chloride (CAVEN), P., 1901, 27.
- Toluidinopropionic acids**,  $\alpha$ -*o*- and  $\alpha$ -*p*-, and the amide and nitrile of the  $\alpha$ -*o*-acid (STEPPE), A., i, 140.
- 2-*p*-Toluidino-5-isopropyl-1:4-benzoquinone, 3:6-di-bromo- (HOFFMANN), A., i, 474.
- p*-Toluidino-*p*-toluquinoneditolylimide, and the action of alcoholic sulphuric acid and ammonia on (BORNSTEIN), A., i, 376.

(Tolyl compounds  $Me=1$ .)

**5-*p*-Toluidino-7-*p*-tolynaphthaphenazonium** 7-chloride, and 9 chloro- (KEHRMANN and KRAZLER), A., i, 420.

**Toluo- $\gamma$ -pyrones**, *o*-, *m*-, and *p*-, and their **carboxylic acids** (RUHEMANN and BAUSOR), T., 472; P., 1901, 40.

**Toluoylbenzoic acid**, *trinitro*- (LIMPRICHT), A., i, 145.

***p*-Toluoylisobutyric acid**, ethyl ester (BLAISE), A., i, 253.

***o*-Toluoylformamide** (GOLDSCHMIDT), A., i, 709.

**3-*p*-Toluoylpicolinic acid** and its oxidation products (FULDA), A., i, 226.

***p*-Toluquinol**, bromoamino-, bromonitro-, and chloroamino-, and their acetyl derivatives, and *di*bromonitro- (ZINCKE), A., i, 330.

***p*-Toluquinone**, chloronitro- and bromonitro-derivatives of (ZINCKE), A., i, 330.

**Toluquinonebenzoyl- $\alpha$ -naphthylhydrazone** (McPHERSON and GORE), A., i, 572.

***p*-Toluquinoneditolylimide**, amino-, and action of *p*-toluidine and its hydrochloride and alcohol on (BÖRNSTEIN), A., i, 375.

***p*-Toluquinophthalone**. See *p*-Methylquinophthalone.

***m*-Tolyl borate** (MICHAELIS and HILLRINGHAUS), A., i, 356.

***o*-Tolyl carbonate** (CHEMISCHE FABRIK VON HEYDEN), A., i, 696.

***o*-Tolyl methyl ether**, *trinitro*- (KAUFLE and WENZEL), A., i, 590.

***p*-Tolyl methyl ether**, *diamino*- and *di*-nitro- (KAUFLE and WENZEL), A., i, 590.

***p*-Tolylallophanic acid**, ethyl ester (PICKARD and CARTER), T., 844; P., 1901, 123.

***p*-Tolylallylsemithiocarbazide**, nitro- (POPE and HIRD), T., 1144; P., 1901, 186.

***o*-Tolylaminobenzyl cyanide** (SACHS), A., i, 272.

***p*-Tolylaminophenylsulphone** and its acetyl derivative (BAMBERGER and RISING), A., i, 202.

***p*-Tolylanilinephenylthiocarbimide**, thio- (V. MEYER, NACKE, and GMEINER), A., i, 265.

***p*-Tolylbiuret** (PICKARD and CARTER), T., 844; P., 1901, 123.

***p*-Tolyl-borobromide** and **-boroxide** (MICHAELIS and RICHTER), A., i, 355.

***p*-Tolylcarbazine** acid and chloride, ethyl esters (BUSCH and HEINRICHS), A., i, 617.

(Tolyl compounds  $Me=1$ .)

***p*-Tolyl-diethylphosphor-ketobetaine** derivatives (MICHAELIS and KRAHE), A., i, 303.

**2-*o*-Tolyl-diketohydrindene** and its 2-benzoyl, 2-benzyl, 2-ethyl and 2-methyl derivatives (GOLDBERG), A., i, 33.

dioxime, phenylhydrazone, and bromo-, chloro-, and nitro-derivatives of (GOLDBERG), A., i, 33.

**4-*p*-Tolyl-2:6-dimethyl-dihydropyridine-3:5-dicarboxylic acid**, ethyl ester (FLÜRSCHHEIM), A., i, 387.

**1-*o*- and *p*-Tolyl-2:5-dimethyl-1:3:4-triazoles** and their salts (PELLIZZARI and ALCIATORE), A., i, 571.

**2:3-Tolylene-diamine**, 6-chloro-, and its combination with dihydroxytartaric acid (COHN), A., i, 637.

**Tolylene-*p*-diamine**, chloro-, and its diacetyl derivative, and hydrochloride and sulphate (VORLÄNDER and SCHRÖDTER), A., i, 463.

**1:3:4-Tolylene-furazan**, nitro- (ZINCKE and DROST), A., i, 73.

***o*-Tolylethylisocarbamide** and its platinum-chloride (McKEE), A., i, 756.

**$\beta$ -*p*-Tolylglutaric acid** (FLÜRSCHHEIM), A., i, 388.

***o*-Tolylglycine**, nitroso- (VORLÄNDER), A., i, 463.

action of hydrogen chloride on (VORLÄNDER and SCHRÖDTER), A., i, 463.

***m*-Tolylglyoxylic acid**, *p*-amino-, and its phenylhydrazone (BOEHRINGER & SONS), A., i, 714.

**Tolyl-4-hydrazine**, 3-nitro-, and its acetyl derivative (POPE and HIRD), T., 1141; P., 1901, 186.

***p*-Tolylhydrazine- $\alpha$ -thiocarbonyl-chloride- $\beta$ -carboxylic acid**, ethyl ester (BUSCH and GROHMANN), A., i, 617.

***p*-Tolylhydroxyoxamide** and its acetyl derivative, reactions of (PICKARD and CARTER), T., 843; P., 1901, 123.

**Tolyliminobenzoyl cyanides**, *o*- and *p*-, and their *p*-nitrobenzoyl derivatives (SACHS), A., i, 272.

**5-*p*-Tolyl-3-methylcyclohexenone** and its oxime, and **4:6-dicarboxylic acid**, ethyl ester (FLÜRSCHHEIM), A., i, 388.

***p*-Tolyl methyl ketone**, selenium derivatives of (KUNCKELL and ZIMMERMANN), A., i, 215.

catechol-, resorcinol-, and quinol-carbohydrazones (EINHORN and ESCALES), A., i, 653.

- (*Tolyl compounds*  $Mc=1$ .)
- 1-*p*-Tolyl-5-methylpyrazole** and its **4-mono-** and **3:4-di-carboxylic acids** and its diethyl ester (BÜLOW and SCHLESINGER), A., i, 98.
- 9-Tolyl-10-methylserosinduline** (FISCHER and BRÜHN), A., i, 417.
- p*-Tolynaphthionic acid** (WITT and SCHNEIDER), A., i, 699.
- $\alpha$ -Tolylnitromethane** and the *isonitro*-derivative (GOLDBERG), A., i, 33.
- Tolxyloxyfumaric acids**, *o*-, *m*-, and *p*-, action of sulphuric acid on (RUHEMANN and BAUSO), T., 472; P., 1901, 40.
- 1-*p*-Tolxyloxymethylbenzoxazole** (COHN), A., i, 752.
- 2-*p*-Tolxyloxymethyl-5 ethoxybenzimidazole** and its picrate (COHN), A., i, 352.
- 3-Tolylphenotriazones**, *o*-, *m*-, and *p*- (MEHNER), A., i, 471.
- Tolylphthalide** and amino- and *trinitro*- (LIMPRICHT), A., i, 146.
- Tolylphthalide**, A., i, 145, 147.
- p*-Tolylrosinduline chlorides**, 10-chloro-5-, and 10-chloro-6-*m*-amino- (KEHRMANN and HIBY), A., i, 419.
- Tolylsemicarbazide**, nitro- (POPE and HIRD), T., 1143; P., 1901, 186.
- p*-Tolylsulphonecarbinol** and its phosphate and acetyl derivative (v. MEYER, NACKE, and GMEINER), A., i, 264.
- p*-Tolylsulphonecarbinylaniline** (v. MEYER, NACKE, and GMEINER), A., i, 264.
- p*-Tolylsulphonedl- $\beta$ -naphthoxyethylamide** (MARCKWALD and CHAIN), A., i, 380.
- p*-Tolylsulphonehydroxylamine** and its dibenzoyl derivative (v. MEYER, NACKE, and GMEINER), A., i, 265.
- p*-Tolylthidiazolone-anilthiol**, **thio-methane**, and ***p*-tolylthiomethane** (BUSCH and WOLPERT), A., i, 234.
- 1-Tolyl-1:3:4-triazoles**, *o*- and *p*-, and their salts (PELLIZZARI and BRUZZO), A., i, 570.
- p*-Tolyltrimethylammonium bromide**, *o*-nitro- (PINNOW), A., i, 413.
- p*-Tolylurethane**, interaction of, with aniline (DIXON), T., 104; P., 1900, 208.
- Topaz**, occurrence of, near Ouro Preto, Brazil (DERBY), A., ii, 169.
- from New South Wales (HARKER), A., ii, 320.
- Tourmaline**, crystallographic constants and chemical composition of (WÜLFING), A., ii, 65.
- Toxicological analysis**. See Analysis.
- effect of tellurium compounds (MEAD and GIES), A., ii, 261.
- Toxins**, artificial modifications of (RITCHIE), A., ii, 464.
- action of proteolytic enzymes on (BALDWIN and LEVENE), A., ii, 667.
- action of peroxides on (SIEBER), A., ii, 566.
- Tragacanth**. See Gum tragacanth.
- Tragacanthan-xylan-bassoric acids** and their salts (O'SULLIVAN), T., 1178; P., 1901, 156.
- Tragacanthose** (O'SULLIVAN), T., 1182; P., 1901, 157.
- Transparency** of matter for X-rays, laws of (BENOIST), A., ii, 215, 216, 308; (HÉBERT and REYNAUD), A., ii, 215.
- Transport numbers**. See Electrochemistry.
- Trapa natans***. See Agricultural Chemistry.
- Travertine** from Vichy (GIRARD and BORDAS), A., ii, 561.
- Tremolite** from Pisek, Bohemia (KREJČÍ), A., ii, 607.
- from Roumania (PONI), A., ii, 26.
- Triacetonealkamine**. See Hydroxy-2:2:6:6-tetramethylpiperidine.
- Triacetoneamine** and its compounds with the alkali metals (MERCK), A., i, 670.
- Triacetonedicarbamide** (WEINSCHENK), A., i, 583.
- Triacetyl**-. See also Parent Substance.
- Triacetylchloroarabinose**, preparation of (RYAN and MILLS), T., 706; P., 1901, 90.
- Triazan derivatives** (VOSWINCKEL), A., i, 53, 617.
- p*-Triazoacetanilide** and ***m*-Triazoacetophenone** (RUPE and v. MAJEWSKI), A., i, 104.
- Triazanisoles**, *o*- and *p*- (RUPE and v. MAJEWSKI), A., i, 104.
- o*-Triazobenzaldehyde**, synthesis of (BAMBERGER and DEMUTH), A., i, 392, 621.
- and its *dibromo*- and *dichloro*-derivatives and their phenylhydrazones (BAMBERGER and DEMUTH), A., i, 392.
- p*-Triazobenzaldehyde** (RUPE and v. MAJEWSKI), A., i, 104.
- o*-Triazobenzaldoxime** (BAMBERGER and DEMUTH), A., i, 392.
- Triazobenzoic acids**, *o*-, *m*-, and *p*-, methyl esters, and the nitrile of the *p*-acid (RUPE and v. MAJEWSKI), A., i, 104.
- p*-Triazobromobenzene** (RUPE and v. MAJEWSKI), A., i, 104.

- 2-Triazo-3:5-dimethyl-benzoic acid**, and -benzaldehyde and its *p*-nitrophenylhydrazone (BAMBERGER and DEMUTH), A., i, 391.
- 1:3:4-Triazole**, derivatives of (PELLIZZARI and MASSA), A., i, 488; (PELLIZZARI and BRUZZO), A., i, 570; (PELLIZZARI and ALCIATORE), A., i, 571.
- Triazoles**, chemistry of the (YOUNG and OATES), T., 659; P., 1901, 86.
- Triazopyrocatechol** methylene ether (RUPE and v. MAJEWSKI), A., i, 104.
- Tribenzophosphinic acid** (MICHAELIS and OHM), A., i, 303.
- Tribenzoyl-**. See also Parent Substance.
- Tribenzoylanthracene** (LIPPMANN and KEPPICH), A., i, 37.
- Tribenzoyltetrahydroanthracene** (LIPPMANN and KEPPICH), A., i, 38.
- Tribenzylacetonedicarboxylic acid**, ethyl ester (FICHTER and SCHIESS), A., i, 544.
- Triboluminescence** (TSCHUGAEFF), A., ii, 489.
- Tricarballic triazoidimide** and trihydrazide and their derivatives (CURTIUS and HESSE), A., i, 70.
- Tri- $\psi$ -cumylphosphine** derivatives (MICHAELIS and KARCHOWSKI), A., i, 304.
- Tridecanaphthene**, chloro- (MABERY and SIEPLEIN), A., i, 306.
- Tridecyl alcohol** (*diethyloctylcarbinol*) (MASSON), A., i, 250.
- Tri-2:5-dimethylbenzaldehyde**, *trithio-* (HARDING and COHEN), A., i, 726.
- 1:2:4-Triethoxybenzene** and its bromo- and nitro-derivatives (BREZINA), A., i, 534, 701.
- Triethoxyethylbenzene** and *di*bromo- (BREZINA), A., i, 701.
- Triethylamine**, compound of, with  $\alpha$ -chlorohydrin, and base from (BIENENTHAL), A., i, 128.
- Triethylammoniumiodoacetic acid**, methyl ester (WEDEKIND), A., i, 639.
- Triethylglyceryltriurethane** (CURTIUS and HESSE), A., i, 71.
- Triethylmelamine** and **Triethylisomelamine**, absorption spectra of (HARTLEY, DOBBIE, and LAUDER), T., 861; P., 1901, 125.
- Triethyloxamines**, supposed existence of two isomeric (DUNSTAN and GOULDING), T., 641; P., 1901, 85.
- Triheptyl alcohol** (GUERBET), A., i, 183.
- 1:2:4-Trihydroxybenzene**, alkylation of (BREZINA), A., i, 700.
- $\alpha\beta$ -Trihydroxybutyric acid**, synthesis of (PREY), A., i, 501.
- Trihydroxybutyric acid**. See also *l*-Erythronic acid.
- 5:7:2'-Trihydroxyflavone** and its triacetyl derivative (v. KOSTANECKI and WEBEL), A., i, 479.
- 5:7:3'-Trihydroxyflavone** and its triacetyl derivative (v. KOSTANECKI and STEUERMANN), A., i, 223.
- Trihydroxyiminotriphenacylamine** and its hydrochlorides (KORTEN and SCHOLL), A., i, 550.
- Trihydroxypentane** (*pentaglycerol*) (KOCH and ZERNER), A., i, 633.
- Trihydroxypentantrhene**, chloro- (BERTHEIM), A., i, 467.
- 2:2':2''-Trihydroxy-1:1':1''-trinaphthylmethane**, *eso*anhydride of, and its acetyl compound and methyl and ethyl ethers (FOSSE), A., i, 323.
- $\beta\gamma$ -Triketopentane** and its dihydrate, dianil and bisphenylhydrazone (SACHS and BARSCHALL), A., i, 670.
- Trimesic acid** (*benzene-1:3:5-tricarboxylic acid*), reduction of, and its methyl and ethyl esters (LAWRENCE and PERKIN), P., 1901, 47. esters (WISLICENUS and BINDEMANN), A., i, 361.
- Trimesitylphosphine** derivatives (MICHAELIS and LOEBNER), A., i, 304.
- 2:4:6-Trimethoxybenzoyl-3'-ethoxyacetophenone** (v. KOSTANECKI and STEUERMANN), A., i, 223.
- 2:4:6-Trimethoxybenzoyl-3':4'-methylene dioxyacetophenone** (v. KOSTANECKI, RÓŻYCKI, and TAMBOR), A., i, 92.
- 2:4:6-Trimethoxybenzoylpyruvic acid**, ethyl ester (v. KOSTANECKI, PAUL, and TAMBOR), A., i, 735.
- 3:4:5-Trimethoxybenzylmethylamine**. See Mezcaline.
- 2:4:6-Trimethoxy-2'-ethoxybenzoylacetophenone** (v. KOSTANECKI and WEBEL), A., i, 479.
- 5:7:3'-Trimethoxy-4'-ethoxyflavone** (DILLER and v. KOSTANECKI), A., i, 476.
- $\alpha\beta\beta$ -Trimethyladipic acid** (NOYES), A., i, 632.
- Trimethylamine**, compounds of, with mono- and *s*-di-chloro- and bromomethyl ethers (LITTELSCHIED), A., i, 443.
- $\alpha\beta\beta$ -Trimethylanhydracetonebenzil** (JAPP and MELDRUM), T., 1040; P., 1901, 176.
- 1:3:5-Trimethylbenzene**. See Mesitylene.
- Trimethylbenzoic acid**, preparation of (VAN SCHERPENZEEL), A., i, 328.

- 2:4:6-Trimethylbenzoic acid**, *dinitro*-, and its chloride, anilide, and phenylhydrazide (KUNCKELL and HILDEBRANDT), A., i, 552.
- Trimethylbenzoylbenzene-*o*-sulphonic acids**, 2:4:5- and *s*-, and their salts (KRANNICH), A., i, 153.
- 2:4:6-Trimethylbenzylidene-aniline**, *-p*-chloroaniline, and *-ψ*-cumidine (HANTZSCH and SCHWAB), A., i, 379.
- Trimethylbrazilin**, preparation and oxidation of (GILBODY, PERKIN, and YATES), T., 1399; P., 1899, 28, 75, 241; 1900, 105.
- Trimethylchlorobutanetricarboxylic acid**, ethyl ester (PERKIN, THORPE, and WALKER), T., 790.
- Trimethylcholeuponic acid**, diethyl ester, salts of (SKRAUP), A., i, 227.
- 3:4:4-Trimethyldihydrobenzene**, 2:6-dichloro- (CROSSLEY), T., 144.
- Trimethylene dibromide**, action of, on benzene, in presence of aluminium chloride (BODROUX), A., i, 196.
- Trimethylene (cyclopropane)**, action of bromine on, under different conditions (GUSTAVSON), A., i, 3.
- 1:2:3-tricyano- (ERRERA and PERCIABOSCO), A., i, 18.
- Trimethylenecarbamide** (CURTIUS and CLEMM), A., i, 69; (TAFEL and WEINSCHEK), A., i, 72.
- Trimethylene-carbinol**, -carbinyamine, and -carboxylic chloride (HENRY and DALLE), A., i, 582.
- Trimethylenecarboxylic acid**, amide and amine of (KIJNER), A., i, 509.
- Trimethylenediamine**. See Propane, *αγ*-diamino-.
- 3:4-cycloTrimethylenepyrazolone** (DIECKMANN), A., i, 539.
- Trimethylenepyrrole**, synthesis of (GUARESCHI), A., i, 341.
- Trimethylenetricarboxylic acid**, and cyano-, and the ethyl ester of the tricyano-derivative (ERRERA and PERCIABOSCO), A., i, 18; (WENZEL), A., i, 402.
- αβ*-Trimethylglutaric acid (hexanedicarboxylic acid)**, and its anilic acid (CROSSLEY), T., 140; P., 1900, 91. attempted synthesis of (BLANC), A., i, 119.
- Trimethyl-tetra- and -hexa-hydrobenzyl-anilines** and the chloro-derivative of the hexahydro-compound (FARBWERKE VORM. MEISTER, LUCIUS, and BRÜNING), A., i, 691.
- Trimethylhexamethylene**, chloro- (MABERY and STEPLEIN), A., i, 306.
- Trimethylcyclohexanes**, 1:3:4- and 1:3:5- (SABATIER and SENDERENS), A., i, 459.
- Trimethylhydroxybutanetricarboxylic acids**, lactones and anhydrides of (PERKIN, THORPE, and WALKER), T., 788; P., 1901, 110.
- Trimethylketodicyclopentane-mono- and -di-carboxylic acids** (PERKIN, THORPE, and WALKER), T., 786; P., 1901, 110.
- Trimethylketodicyclopentanetricarboxylic acid**, ethyl ester and potassium salt (PERKIN, THORPE, and WALKER), T., 786.
- 1:3:3-Trimethyl-2-methyleneindoline**, formula of (BRUNNER), A., i, 407; (PLANCHER), A., i, 563.
- βεθ*-Trimethyl-ε-nonene** (GRIGNARD), A., i, 681.
- ββγ*-Trimethylpentane-αγ-olidoic acid** (BLANC), A., i, 119.
- 2:4:6-Trimethylphenyl-acetylene** and -chloroacetylene (KUNCKELL and KORITZKY), A., i, 75.
- Trimethylphloroglucinol** ethyl ether (HERZIG and HAUSER), A., i, 206.
- 1:4:6-Trimethylpurone** and its acetyl derivative, and **1:4:6-Trimethylisopurone** (TAFEL), A., i, 238.
- 2:4:6-Trimethylpyridine** from Scottish shale oil (GARRETT and SMYTHE), P., 1900, 190.
- Trimethylsuccinic acid** (LAPWORTH and LENTON), P., 1901, 148. resolution of, into its optical antipodes (PAOLINI), A., i, 253.
- Trimethylthujylammonium** hydroxide and iodide (TSCHUGAEFF), A., i, 601.
- Trimethyltrimethylene glycols** and *di*-bromides and *di*iodide (ZELINSKY and ZELIKOFF), A., i, 657.
- Trimethyltrimethylenes**,  $\Delta^{1,1,2}$  and  $\Delta^{1,2,3}$ . (ZELINSKY and ZELIKOFF), A., i, 657.
- Trimethyltriase** (*dihydroxydihydro-mesityl oxide*) (HARRIES and PAPPOS), A., i, 673.
- 1:4:4-Trimethyltrimethylenedicarbon-imide**, 3:5-dicyano- (GUARESCHI), A., i, 342.
- βζμ*-Trimethyltriskaideka-*βζθλ*-tetrene-κ-one** and its isomeric (DURAND, HUGUENIN & Co. and PHILIPPE BARBIER), A., i, 727.
- 2:4:6-Trimethylstyrene**, *αβ*-dichloro- (KUNCKELL and KORITZKY), A., i, 75.
- Triocetyl alcohol**, synthesis of, and its acetic ester (GUERBER), A., i, 307.
- Trioxymethylene**, action of acid chlorides on (DESCUDE), A., i, 501, 644.
- Trioxytetramethylene**, *dichloro*- (LITTERSCHIED), A., i, 443.
- Triphenylacetic acid** (STOBBE and ZEITSCHSEL), A., i, 538.



- Triphenylcarbinol**, reactions of (HERZIG and WENGRAF), A., i, 702.
- 1:4:5-Triphenyldihydro-1:2:4-triazole-3-thiomethane** (BUSCH and WOLPERT), A., i, 235.
- 2:3:5-Triphenylfurfuran** (JAPP and MICHIE), T., 1024; P., 1901, 174.
- Triphenylguanidine** guaiacolsulphonate (GOLDSCHMIDT), A., i, 643.
- Triphenylmethane** and its derivatives, carbinol compounds of (HERZIG and WENGRAF), A., i, 702.
- $\omega$ -chloro-, preparation of (GOMBERG), A., i, 77, 319, 374; (NORRIS and SANDERS), A., i, 198.
- compound of, with zinc chloride (GOMBERG), A., i, 638.
- $\omega$ -iodo- (GOMBERG), A., i, 77.
- Triphenylmethane colouring matters**, new (GRIMAU), A., i, 269.
- absorption spectra of (CAMICHEL and BAYRAC), A., i, 296.
- relation between their chemical constitution and the absorption spectra of their aqueous solutions (LEMOULT; CAMICHEL), A., i, 100.
- Triphenylmethyl** (GOMBERG), A., i, 77, 690.
- compounds of, with ether and with ethyl acetate (GOMBERG), A., i, 638.
- peroxide and its hexanitro- (GOMBERG), A., i, 77, 319.
- See also Diphenylphenylenemethane.
- 1:2:3-Triphenyl-4:2- $\beta$ -naphthaisooxazine** (BETTI), A., i, 612, 778.
- Triphenyl-1:2-oxypyro-1:4-diazole**. See 4:5-Oxy-1:3:4-triphenylosotriazole.
- 2:3:5-Triphenylpyrrole**, 4-nitroso-, and its ethyl ether, benzoyl derivative, and phenylcarbimide (ANGELICO and CALVELLO), A., i, 747.
- Triphenylsilicol** and its chloride and acetyl derivative (KIPPING and LLOYD), T., 452; P., 1901, 32.
- Triphenylthiotriazolone** (SCHALL), A., i, 766.
- 1:2:5-Triphenyl-1:3:4-triazole** and its hydrochloride (PELLIZZARI and ALCIATORE), A., i, 571.
- Triphenyltrimesic acid** and its ethyl esters, molecular weight of (MANTHEY), A., i, 31.
- Triplite** from Moravia (v. JOHN), A., ii, 248.
- Tripropylamine**, compound of, with  $\alpha$ -chlorohydrin, and base from (BIENENTHAL), A., i, 129.
- oxide (MAMLOCK and WOLFFENSTEIN), A., i, 673.
- Tristearin**, specific heat of (VANDEVYVER-GRAU), A., ii, 46.
- Tritolylchloromethane** and its derivatives (GOMBERG and VOEDISCH), A., i, 374.
- Tri-*p*-tolylphosphine** derivatives (MICHAELIS and OHM), A., i, 302.
- Tri-*p*-tolylphosphoroketobetaine** derivatives (MICHAELIS, HOSSEUS, and KRAHE), A., i, 303.
- Tri-*p*-tolylsulphonamide** (v. MEYER, NACKE, and GMEINER), A., i, 264.
- Tritonium *snodosum***, free aspartic acid in (HENZE), A., ii, 178.
- Triundecenoic acid**, anhydride and glyceride of (THOMS and FENDLER), A., i, 252.
- Trixylylphosphines**, *m*- and *p*-, and their derivatives (MICHAELIS, HEINE, and SCHAEUBLE), A., i, 304.
- Tropan**, synthesis of (WILLSTÄTTER), A., i, 650.
- methobromide, bromo-, and the platinichloride of the methochloride (WILLSTÄTTER), A., i, 225.
- methobromide and methochloride, 6-bromo- (WILLSTÄTTER), A., i, 651.
- methochloride and methiodide and 2-bromo- of the methiodide (WILLSTÄTTER), A., i, 650.
- Tropan**, 3-bromo- (WILLSTÄTTER), A., i, 744.
- Tropanol** methobromide,  $\psi$ -bromo- (WILLSTÄTTER), A., i, 226.
- Tropidine**, synthesis of (WILLSTÄTTER), A., i, 225, 651.
- conversion of, into tropine (WILLSTÄTTER), A., i, 744.
- isoTropidine**, synthesis of (WILLSTÄTTER), A., i, 224.
- methiodide- (WILLSTÄTTER), A., i, 651.
- Tropilidene**. See  $\Delta^{1,3,6}$ -cycloHeptatriene.
- $\psi$ -Tropinecarbonic acid** and its additive salts (WILLSTÄTTER and BODE), A., i, 482.
- Tropinone** and its compounds with the alkali metals (MERCK), A., i, 670.
- conversion of, into *r*-cocaine (WILLSTÄTTER and BODE), A., i, 482.
- Trouton's law**, generalisation of (DE FORCRAND), A., ii, 372.
- Truxone**, and chloro- (MANTHEY), A., i, 31.
- Trypsin**, chemical nature of (LEVENE), A., i, 576.
- role of the spleen in the formation of (HERZEN; CAMUS and GLEY), A., ii, 324.
- action of, on fibrin (VERNON), A., i, 576.
- action of, on proteids (LAWROFF; DZIERZGOWSKI and SALASKIN), A., ii, 666; (MOCHIZUKI), A., ii, 667.

- Trypsin** in yeast (HAHN and GERET), A., i, 59; ii, 677; (KUTSCHER), A., ii, 466, 523.
- Tryptic activity**, estimation of (SAMOILOFF), A., ii, 401.
- Tuberculosis**, respiratory exchange in (ROBIN and BIRNER), A., ii, 327.  
use of lecithin in (CLAUDE and ZAKY), A., ii, 673.
- Tungsten** (DEFACQZ), A., ii, 244.  
specific heat of (DEFACQZ and GUICHARD), A., ii, 659.
- Tungsten alloys**, production of, in the electric furnace (SARGENT), A., ii, 105.  
with aluminium (GUILLET), A., ii, 388.  
estimation of chromium and manganese in (IBBOTSON and BREARLEY), A., ii, 198.
- Tungsten arsenide** and chloroarsenide (DEFACQZ), A., ii, 163.  
boride (TUCKER and MOODY), P., 1901, 129.  
trioxide, separation of, from molybdenum trioxide (RUEGENBERG and SMITH), A., ii, 75.
- Tungstic acid**, estimation of (HERTING), A., ii, 284.  
separation of, from silicic acid (HERTING), A., ii, 284; (WELLS and METZGER), A., ii, 534.
- Tungsten monophosphide** (DEFACQZ), A., ii, 105.
- Tungsten**, detection and estimation of:—  
detection of (DEFACQZ), A., ii, 244, 284.  
estimation of, in ores (BULLHEIMER), A., ii, 41.  
estimation of, in steel and steel-making alloys (IBBOTSON and BREARLEY), A., ii, 199.  
Schoffell's process for estimating, in steel (BAGLEY and BREARLEY), A., ii, 200.
- Tungsten-steel**, analysis of (HERTING), A., ii, 284.
- Turgite** from the Uspensk Mine, South Urals (SAMOILOFF), A., ii, 605.
- Turquoise**, chemical composition of (PENFIELD), A., ii, 27.
- Tutin** from New Zealand Coriariae (EASTERFIELD and ASTON), T., 120; P., 1900, 211.  
and coriamyrtin, comparison of the properties of (EASTERFIELD and ASTON), T., 125; P., 1900, 212.
- Tutu**, poisonous glucosides of (EASTERFIELD and ASTON), T., 120; P., 1900, 211.
- Tyrosine**, reactions of (DUCCESCHI), A., i, 354.
- L-Tyrosine** ethyl ester and its piperazine derivative (FISCHER), A., i, 193.

## U.

- Uganda-aloin** (*capaloin*), and its dibenzoyl derivative (TSCHIRCH and KLAIVENESS), A., i, 602.
- Ulexite**, synthesis of (DE SCHULTEN), A., ii, 558.
- Umbelliferonecarboxylic acids**. See Hydroxycoumaronecarboxylic acids.
- Umbilicic and Umbilicaric acids** (HESSE), A., i, 596.
- Uncinatic acid** from lichens (HESSE), A., i, 150.
- Undecanaphthene**, chloro- (MABERY and SIEPLEIN), A., i, 306.
- Undecanedicarboxylic acid** (KRAFFT and SELDIS), A., i, 115; (KOMPPA), A., i, 365.
- Undecenamidoxime** (KRAFFT and TRITSCHLER), A., i, 115.
- Undecenoic acid**, oxidation of, with permanganate (THOMS and FENDLER), A., i, 186.
- U-Undecenoic acid**, and its amide, bromine derivatives, and salts (KRAFFT and SELDIS), A., i, 115.
- U-Undecenoic anhydride** and its tetrabromide, amide, chloride and nitrile (KRAFFT and TRITSCHLER), A., i, 115.
- Undecinene**. See  $\beta\zeta$ -Dimethyl- $\beta\zeta\theta$ -nonatriene.
- Undecyl alcohol** (*disoamylcarbinol*) (GRIGNARD), A., i, 250, 680.
- U-Undecylene**, amino-, and its benzoyl derivative and phenylthiocarbamide (KRAFFT and TRITSCHLER), A., i, 115.
- Undecylenic acid**, hydrobromides of (WALKER and LUMSDEN), T., 1191; P., 1901, 188.
- Undecylic acid**,  $\omega$ -bromo-, and its isomeride (WALKER and LUMSDEN), T., 1193; P., 1901, 188.
- Unsaturated compounds**, tendency of carbon atoms in, to interlink (ERLENMEYER), A., i, 373.  
addition of hydrogen and other simple molecules to (ERLENMEYER), A., i, 357.  
addition of ketomethane derivatives to (VORLÄNDER), A., i, 84.
- Uracil** from yeast nuclein (ASCOLI), A., i, 108.
- Uralitised diallage** from the Ardennes (KLEMENT), A., ii, 321.
- Uranium**, preparation of (ALOY), A., ii, 317.  
pyrophoric (FÉREÉ), A., ii, 514.  
new method of determining the atomic weight of (ALOY), A., ii, 244.

- Uranium amalgam** (FÉRÉE), A., ii, 514.
- Uranium nitrate** (OECHSNER DE CONINCK), A., ii, 104, 105, 164, 165, 390.  
 electrolysis of (OECHSNER DE CONINCK and CAMO), A., ii, 556.
- metanitride** (KOHLSCHUTTER), A., ii, 598.
- sesquioxide** (OECHSNER DE CONINCK), A., ii, 165
- sulphate** (OECHSNER DE CONINCK), A., ii, 390, 660.
- Uranium**, estimation of, electrolytically (KOLLOCK and SMITH), A., ii, 695.
- Uranium minerals**, occurrence of helium and nitrogen in (KOHLSCHUTTER), A., ii, 598.  
 analysis of (FRITCHLE), A., ii, 200.
- "Uranium red"** (KOHLSCHUTTER), A., ii, 165.
- Urano-oxalic acid** and its salts (KOHLSCHUTTER and ROSSI), A., i, 448.
- Uranyl chloride**, hydrochloride of, and compounds of, with potassium and sodium chlorides (ALOY), A., ii, 164.  
 and water (MYLIUS and DIETZ), A., ii, 660.  
 nitrate, preparation of, on a large scale (JANDA), A., ii, 603.
- Uraster rubens**, orange pigment of (GRIFFITHS and WARREN), A., i, 94.
- Urazines**, constitution of the (BUSCH), A., i, 488, 613.
- Urazoguanazole** and imino- (PELLIZZARI and RONCAGLIOLI), A., i, 773.
- Urazoiminourazole**, imino- (PELLIZZARI and RONCAGLIOLI), A., i, 774.
- Urazole**, imino-, and its diacetyl derivative (PELLIZZARI and RONCAGLIOLI), A., i, 773.
- Urazole series**, syntheses in the (BUSCH), A., i, 488; (BUSCH and GROHMANN), A., i, 616; (BUSCH and HEINRICH), A., i, 617.
- Urea**, formation of, in the body (v. GULEWITSCH), A., ii, 29.  
 formation of, by the oxidation of albumin (HUGOUNENQ), A., i, 491.  
 amount of, in urine (JOB), A., ii, 139.  
 estimation of (BRAUNSTEIN), A., ii, 140; (POLLAK), A., ii, 210.  
 estimation of, in urine (BRAUNSTEIN), A., ii, 140; (FOLIN), A., ii, 630; (LONG), A., ii, 705.  
 See also Carbamide.
- Urease**, decomposition of carbamide by (BEYERINCK), A., ii, 264.
- Urethane**, action of, on aromatic diamines (MANUELLI and RECCHI), A., i, 49.
- Urethanes**, interaction of, with primary benzenoid amines (DIXON), T., 102; P., 1900, 207.
- Urethanophenyl-acetamide, -acetoneitrile**, and -acetoxamidine and its acetyl derivative (LEHMANN), A., i, 275.
- Urethylcoumarone** (STOERMER and CALOV), A., i, 336.
- Uric acid**, synthesis of, from cyanoacetic acid (TRAUBE), A., i, 54.  
 formation of, in the liver of birds (KOWALEWSKI and SALASKIN), A., ii, 671.  
 and its salts, behaviour of, in solution, and estimation of, in its salts (HIS and PAUL), A., i, 131.  
 oxidation of, by ammonium persulphate (HUGOUNENQ), A., i, 242.  
 reduction of, electrolytically (TAFEL), A., i, 236.  
 commercial, presence of guanine in (HUGOUNENQ), A., i, 262.  
 spontaneous conversion of, into carbamide (GIGLI), A., i, 677.  
 influence of nitrogenous food on the excretion of (MAUREL), A., ii, 565.  
 estimation of, in urine (BOUILLET), A., ii, 290; (FOLIN and SHAFFER), A., ii, 585.
- Urinary bladder**, non-permeability of the wall of the (COHNHEIM), A., ii, 564.  
 constituents, influence of lecithin on (ZAKY), A., ii, 673.
- Urine**, action of currents of high frequency on the secretion of (DENOYÉS, MARTRE, and ROUVIÈRE), A., ii, 564, 611.  
 alcapton, benzoylation of (ORTON and GARROD), A., ii, 614.  
 action of dimethylaminobenzaldehyde on (PROSCHER), A., ii, 260.  
 effect of certain purine derivatives on the excretion of (ACH), A., ii, 31.  
 effect of sodium chloride on the excretion of (THOMPSON), A., ii, 30.  
 action of isotonic solutions of sodium chloride and sulphate on (MAGNUS), A., ii, 67.  
 in cystinuria, diaceturia, and indicanuria (KOBERT), A., ii, 68.  
 acidity of (BERTHELOT), A., ii, 611.  
 electrometric determination of the acidity of (v. RHORER), A., ii, 672.  
 acids in the, after feeding with citral (HILDEBRANDT), A., ii, 181, 669.  
 an albumose in (MILROY), A., ii, 68.  
 influence of certain diuretics on the amount of alkali in (KATSUYAMA), A., ii, 407.  
 excretion of antipyrine in (LAWROFF), A., ii, 463.

**Urine**, excretion of cacodylic acid in (BARTHE and PÉRY), A., ii, 364.

amount of carbohydrates in diabetic and normal (ROSIN ; v. ALFTHAN), A., ii, 179.

variations in the amount of chlorides and nitrogen in, during insufficient nutrition (JAVAL), A., ii, 565.

organic chlorine compounds in (VILLE and MOITESSIER), A., ii, 565.

indoxyl origin of red colouring matters of (MAILLARD), A., ii, 407.

red colouring matter in, after administration of pyramidone (JAFFÉ), A., ii, 672.

creatinine in (GREGOR), A., ii, 67.

iron of normal (NICOLA), A., ii, 326.

relationship of iron in, and in the blood (JOLLES and WINKLER), A., ii, 30.

kynurenic acid in (MENDEL and SCHNEIDER), A., ii, 259, 565 ; (GIES), A., ii, 407.

amount of nitrogen in, after extirpation of the liver (LANG), A., ii, 407.

influence of caffeine on nitrogenous excretion (RIBAUT), A., ii, 565.

amount of phosphorus in, during inanition (SCHULZ and MAINZER), A., ii, 407.

influence of diet on the phosphoric acid and sodium chloride in (MAUREL), A., ii, 565.

excretion of phosphorus oxygen compounds in (GAMÉL), A., ii, 610.

oxidation of the organic compounds of (JOLLES), A., ii, 259.

influence of caffeine and theobromine on the excretion of purine substances in (KRÜGER and SCHMID), A., ii, 463.

nature of the sugar in (PAVY and SIAU), A., ii, 257.

sugars in diabetic (LÉPINE and BOULUD), A., ii, 409.

amount of urea in (JOB), A., ii, 139.

[ influence of nitrogenous food on the amount of uric acid in (MAUREL), A., ii, 565.

**Urine**, analytical processes relating to:—

detection of acetanilide in (PETERMANN), A., ii, 485.

detection of acetic acid in (LIP-LIAWSKY), A., ii, 428.

detection of albumin in (PRAUM ; ROCH), A., ii, 710.

the precipitation of albumin in, by clarifying agents (GRÜTZNER), A., ii, 295.

detection of antithermic substances in (PETERMANN), A., ii, 293.

**Urine**, analytical processes relating to:—

detection of bilirubin in, by Ehrlich's diazo-reaction (PRÖSCHER), A., ii, 296.

detection of cacodylic acid in (HEFFTER), A., ii, 464.

containing iodides, detection of indican in (KÜHN), A., ii, 487.

detection of mercury in (BARDACH), A., ii, 579.

detection of peptone in (FREUND), A., ii, 710.

detection of sugar in (OFFER), A., ii, 354 ; (RIEGLER), A., ii, 426.

Neumann's modification of Fischer's phenylhydrazine test for sugar in (MARGULIES), A., ii, 135.

the phenylhydrazine test in the absence of sugar in (JOLLES), A., ii, 425.

estimation of acetone in, gasometrically (RIEGLER), A., ii, 361.

estimation of alkaloids in (GUILLERMARD), A., ii, 521.

estimation of ammonia in (FOLIN), A., ii, 575.

cell for the clinical estimation of hæmoglobin in (ADAM), A., ii, 488.

estimation of  $\beta$ -hydroxybutyric acid in (BERGELL), A., ii, 701.

estimation of indican in (WOŁOWSKI), A., ii, 293 ; (BOUMA), A., ii, 487.

estimation of iron in human (HOFFMANN), A., ii, 326.

estimation of nitrogen in, for clinical purposes (JOLLES), A., ii, 688.

estimation of the nitrogen of amino-acids in (KRÜGER and SCHMID), A., ii, 290.

estimation of sugar in (PATEIN), A., ii, 355.

estimation of small amounts of sugar in (RAIMANN), A., ii, 582.

estimation of sugar in, by Lehmann's method (GOETZEL-ALBERS), A., ii, 355.

estimation of urea in (BRAUNSTEIN), A., ii, 140 ; (FOLIN), A., ii, 630 ; (LONG), A., ii, 705.

estimation of uric acid in (BOUILLET), A., ii, 291 ; (FOLIN and SHAFFER), A., ii, 585.

**Urinometer** (JOB), A., ii, 139 ; (GIRARDET), A., ii, 362.

**Urotropine**. See Hexamethylenetetramine.

**Usnetol** (HESSE), A., i, 151.

**Usnic acids** from lichens (HESSE), A., i, 85, 149, 595 ; (ZOFF), A., i, 87, 546 ; (SALKOWSKI), A., i, 152.

**Usnidic acid** (HESSE), A., i, 595.

## V.

- iso***Valeraldehyde**, condensation products of (ROSINGER), A., i, 669.  
condensation of, with acetaldehyde (WOGRIKZ), A., i, 254.
- iso***Valeraldehyde-aniline** and *p*-toluidine, reduction of (EIBNER and PURUCKER), A., i, 168.
- Valerianilide**,  $\alpha$ -cyano- (HALLER and BLANC), A., i, 261.
- Valerhydroxamic acid** (BAMBERGER and SCHEUTZ), A., i, 548.
- Valerian**, an oxydase in (CARLES), A., i, 59.
- Valeric acid**, calcium salt, dry distillation of (DILTHEY), A., i, 498.
- Valeric acid**, amino-, and its phenyl-carbimide (FISCHER), A., i, 781.
- $\alpha\delta$ -diamino-, synthesis of (FISCHER), A., i, 191.
- $\alpha$ -chloro-, and its chloride, nitrile, and ethyl ester (SERVAIS), A., i, 112.
- $\delta$ -chloro-, and its ethyl ester (MELLOR), T., 132.
- Valeric acid** ( *$\alpha$ -methylbutyric acid*),  $\alpha$ -chloro-, and its chloride, nitrile, and ethyl ester (SERVAIS), A., i, 113.
- iso***Valeric acid**, (phenyl ester (AUTENRIETH), A., i, 186.
- iso***Valeric acid**,  $\alpha$ -chloro-, and its chloride, nitrile, and ethyl ester, and  $\alpha$ -bromo- (SERVAIS), A., i, 112.
- $\alpha$ -iodo-, and its salts (ZERNOFF), A., i, 185.
- iso***Valeric anhydride** (AUTENRIETH), A., i, 186.
- Valerolactoneacetic acid** and its salts (FITTIG and ROTH), A., i, 121.
- $\gamma$ -**Valerolactone- $\alpha$ -carboxylic acid**,  $\delta$ -chloro-, ethyl ester, sodium salt and hydrazido-ester, and dichloro- and chlorobromo- (TRAUBE and LEHMANN), A., i, 501.
- Valerolactone- $\gamma$ -carboxylic acid**,  $\alpha$ -*iso*-nitroso- (WOLFF and HEROLD), A., i, 503.
- Valeronitrile**, specific heat and latent heat of evaporation of (KAHLENBERG), A., ii, 492.
- iso***Valerylalanthranilic acid** (GOTTHELF), A., i, 766.
- i*-**Valerylidenedianiline** anhydrosulphite (EIBNER), A., i, 378.
- Vanadium**, cosmic diffusion of (HASSELBERG), A., ii, 251.  
arc spectrum of (LOCKYER and BAXANDALL), A., ii, 489.
- Vanadium ores**, analysis of (FRITCHIE), A., ii, 200.
- Vanilla plant** from the Congo, sap of the (HÉBERT), A., ii, 34.
- Vanillideneaminophenylguanidine** picrate (PELLIZZARI and RICKARDS), A., i, 769.
- Vanillin**, estimation of, in presence of piperonaldehyde (HANUŠ), A., ii, 206.
- Vapour density**, determination of, under reduced pressure (SCHALL), A., ii, 87.  
See also Density.
- Vapour pressure** (PONSOT), A., ii, 542.  
Dupré-Rankine's law relating to (JULIUSBURGER), A., ii, 86.  
exact relation between osmotic pressure and (NOYES), A., ii, 87;  
(DIETERICI), A., ii, 439.  
of aqueous ammonia solution (PERMAN), T., 718; P., 1901, 46.  
influence of neutral salts on the (GAUS), A., ii, 7.  
influence of sodium sulphate on (PERMAN), T., 725; P., 1901, 47.  
of a series of benzene compounds (WINKELMANN), A., ii, 57; (WORINGER), A., ii, 87.  
of mixed crystals of isomorphous salts (HOLLMANN), A., ii, 436.  
of mixtures of hydrogen chloride and methyl ether (KUENIN), A., ii, 146.  
in mixtures of two liquids (v. ZAWIDZKI; TAYLOR), A., ii, 7.  
of binary mixtures (SCHREINEMAKERS), A., ii, 9, 57; (KOHNSTAMM), A., ii, 145; (CAUBET), A., ii, 147; (DUHEM), A., ii, 372; (KOHNSTAMM and VAN DALFSEN), A., ii, 641.  
influence of foreign substances on the (SCHREINEMAKERS), A., ii, 641.  
apparatus for determining the (v. ZAWIDZKI), A., ii, 6.  
of ternary mixtures (SCHREINEMAKERS), A., ii, 9, 57, 146, 224, 305, 372, 436, 641.  
maximum, at 25° of solutions of the chlorides and sulphates of magnesium and potassium, the solutions being saturated with sodium chloride (VAN'T HOFF and v. EULER-CHELPIN), A., ii, 249.  
of aqueous alcoholic salt solutions (WREWSKY), A., ii, 56.  
of sodium chloride solution, determination of the decrease of, at higher temperatures (SMITHS), A., ii, 304.  
of solutions (PONSOT), A., ii, 593.  
of solutions which are not very dilute, determination of the decrease in (SMITHS), A., ii, 304, 436.  
of water at temperatures between -12° and 25°, especially at 0° (THIESEN and SCHEEL), A., ii, 86.

- Vapours**, solvent action of (LINCOLN), A., ii, 89.  
combustible, and air, explosion of mixtures of (KUBIERSCHKY), A., ii, 232.
- Vapour tension**. See Vapour pressure.
- Vegetable matter**, estimation of proteid nitrogen in (FRAPS and BIZZELL), A., ii, 140.
- Vegetables**. See Agricultural Chemistry.
- Velocity of chemical change**. See Affinity.
- Veratric acid**, dichloro-, and its methyl ester (MAZZARA), A., i, 720.
- Veratric chloride** and amide (MEYER), A., i, 628.
- Vesuvius**, simultaneous production of two nitrogen compounds in the crater of (MATTEUCCI ; GAUTIER), A., ii, 63.
- Vetches**. See Agricultural Chemistry.
- Vetiver**, oil of (THEULIER), A., i, 397.
- Vinegar**, new indicator for determining the acidity of (RUNYAN), A., ii, 629.  
detection of methyl alcohol in (ROBINE), A., ii, 353, 480.
- Vines**. See Agricultural Chemistry.
- $\alpha$ -Vinylacetonealkamine**. See 4-Hydroxy-2:6:6-trimethylpiperidine.
- Vinyldiacetoneamine** and its compounds with the alkali metals (MERCK), A., i, 670.
- Vinylglycollic acid**. See  $\alpha$ -Hydroxy- $\beta$ -butenoic acid.
- Violaquercitrin** (PERKIN), P., 1901, 88.
- Violein** and its triacetate (THIELE and JAEGER), A., i, 723.
- Viscosity** (*internal friction*), relation of, to other physical constants (BATSCHINSKI), A., ii, 438.  
of chrome alum solutions (FERRERO), A., ii, 494.  
of gases as affected by temperature (RAYLEIGH), A., ii, 9.  
of liquids in relation to temperature and chemical constitution (BATSCHINSKI), A., ii, 645.  
of mixtures of liquids and solutions (LEES), A., ii, 148.  
of some essential oils (JEANCARD and SATIE), A., i, 394.  
of mixtures of solutions of salts, relation of, to their state of ionisation (BARNES), A., ii, 374.
- Vitellin** (LEVENE and ALSBERG), A., i, 300.
- Vitrified quartz** (SHENSTONE), A., ii, 552.
- Voandzeia subterranea*. See Agricultural Chemistry.
- Volatility** of lead oxide (STOERMER), A., ii, 654.
- Voltameter**. See Electrochemistry.
- Volume**, atomic, relation between atomic weight, melting point and (BAYLEY), A., ii, 497.  
molecular, determination of, in organic solvents (CARRARA and LEVI), A., ii, 3.  
specific, as the determining criterion of chemical combination in alloys (MAEY), A., ii, 655.  
of liquids at infinite pressure (PAGLIANI), A., ii, 644.  
of liquid and saturated vapour, relation between the temperature changes of the (VAN DER WAALS), A., ii, 305.
- W.**
- Wall-paper**, arsenical gas from (BIGNELLI), A., i, 20.
- WATER** :—  
constitution of (WITT), A., ii, 498.  
molecular constitution of (SUTHERLAND), A., ii, 92.  
dielectric constant of (TURNER), A., ii, 54.  
vapour tension of, at temperatures between  $-12^\circ$  and  $25^\circ$ , especially at  $0^\circ$  (THIESEN and SCHEEL), A., ii, 86.  
specific gravity of solutions of alcohol, ether, and (BUSNIKOFF), A., i, 306.  
absorption of the vapour of, by chemical compounds (BUSNIKOFF), A., ii, 58, 496.  
equilibrium in the system, acetone, phenol and (SCHREINEMAKERS), A., ii, 445.  
equilibrium between acid, alcohol, ester, and (EULER), A., ii, 307.  
equilibrium in the system, ether, succinonitrile and (SCHREINEMAKERS), A., ii, 641.  
composition of the vapour phase of the system aniline and, and aniline, phenol and (SCHREINEMAKERS), A., ii, 9, 57.  
composition of the vapour phase in the system phenol and, with one or two liquid phases (SCHREINEMAKERS), A., ii, 9, 57.  
influence of, as solvent, on the rotation of ethyl tartrate (PATTERSON), T., 171 ; P., 1900, 176.
- NATURAL WATERS** :—  
detection, at the source, of metals present in small quantities in (GARBIGOU), A., ii, 75.  
estimation of dissolved gases in (WINKLER), A., ii, 696.
- Blood or red rain**, composition of, from Sicily (JEAN and BRUHAT), A., ii, 456.

**NATURAL WATERS :—**

- Blood of red rain** at Palermo in March, 1901 (MEUNIER), A., ii, 322.  
 deposit which fell in Victoria, Australia, composition of (PHIPSON), A., ii, 516.
- Moorland waters**, the origin of the combined chlorine in (ACKROYD), T., 673 ; P., 1901, 87.
- River waters** of the Province Rheinhessen in the Rheingau and Taunus (LUEDECKE), A., ii, 417.  
 of the Rhône, presence of ferrous oxythiocarbonate in the (CAUSSE), A., ii, 61.
- Lake water** of the salt lakes of Roumania (BUJOR), A., ii, 114.
- Spring and mineral waters**, variation in the composition of, detected by electrical conductivity (MULLER), A., ii, 456.  
 alumina in (PARMENTIER), A., ii, 516.  
 simultaneous presence of barium and sulphates in (CARLES), A., ii, 506.  
 lithiniferous, analysis of (RANZOLI), A., ii, 423.  
 hot sulphuretted, origin of (GAUTIER), A., ii, 322.  
 sulphuretted, estimation of sulphides, hydrosulphides, polysulphides, and thiosulphates in (GAUTIER), A., ii, 277.  
 thermal, of Achkel (PUAUX), A., ii, 27.  
 of Boston Spa, barium in the (RICHARDS), A., ii, 252.  
 of the Cévennes Spring at Ucel (Ardèche) (BARRAL), A., ii, 252.  
 hot, of Gastein, Salzburg (LUDWIG and PANZER), A., ii, 114.  
 from the Kiedrich Spring, near Eltville, Rhine (FRESENIUS), A., ii, 66.  
 sulphated calcareous, at Lautaret (Hautes-Alpes) (MULLER), A., ii, 114.  
 of Roumania (PONI), A., ii, 27.  
 of Salsomaggiore, organic iodine in the (MONTANARI), A., ii, 664.  
 of Val Sinestra, Lower Engadine (NUSSBERGER), A., i, 322.  
 hot, from Vals, Ligne Valley (NUSSBERGER), A., ii, 322.  
 from Western Australia (SIMPSON), A., ii, 454.
- Sea water**, evaporation of (VAN'T HOFF and EULER-CHELPIN), A., ii, 249.  
 action of, on pozzuolana mortar (REBUFFAT), A., ii, 18.  
 from the Red Sea (NATTERER), A., ii, 173.
- LXXX. ii.

**NATURAL WATERS :—**

- Potable waters**, chlorine peroxide as a steriliser of (REYCHLER), A., ii, 548.
- Well waters**, alkaline, from the chalk (FISHER), A., ii, 627, 665.  
 of the Province Rheinhessen in the Rheingau and Taunus (LUEDECKE), A., ii, 417.  
 Trafalgar Square (FISHER), A., ii, 665.
- Water analysis :—**  
 analysis of well (FISHER), A., ii, 627.  
 reaction characteristic of pure (CAUSSE), A., ii, 581.  
 analysis and softening of, for boilers (GIORGIS and FELICIANI), A., ii, 581.  
 detection of ammonia in, by mercuric chloride (FERRARO), A., ii, 192.  
 detection of arsenic in (GOSIO), A., ii, 193.  
 detection of *Bacillus coli communis* in, by neutral red (MAGGILL ; SAVAGE), A., ii, 696.  
 detection of acid carbonates in (POZZI-ESCOT), A., ii, 346.  
 detection of cystin in (MOLINIÉ), A., ii, 42 ; (CAUSSE), A., ii, 133.  
 detection of lead in (BELLOCQ), A., ii, 349.  
 improvement of the diphenylamine test for nitrates in (HEFELMANN), A., ii, 532.  
 detection of nitrates in, with brucine and glacial formic acid (CAZENEUVE and DÉFOURNEL), A., ii, 532.  
 estimation of air in (PELLET), A., ii, 75.  
 estimation of ammonia, nitric and nitrous acids in (WINKLER), A., ii, 627.  
 estimation of calcium in (GASSELIN), A., ii, 133.  
 estimation of calcium and magnesium in (WINKLER), A., ii, 347.  
 estimation of organic carbon in (KÜNIG), A., ii, 351.  
 estimation of carbon dioxide in (ELLMS and BENEKER), A., ii, 627.  
 estimation of the hardness of (MORPURGO), A., ii, 133 ; (PLEISSNER), A., ii, 425.  
 estimation of nitric acid in (KOST-JAMIN), A., ii, 38 ; (HENRIET), A., ii, 422 ; (CAZENEUVE and DÉFOURNEL), A., ii, 532 ; (WINKLER), A., ii, 627.  
 estimation of nitrous acid in (WINKLER), A., ii, 627.  
 estimation of oxidisable organic matter in (FRERICHs), A., ii, 201.

**Water analysis:—**

source of error in the permanganate process for estimating organic matter in (DUYK), A., ii, 351.

estimation of dissolved oxygen in, in presence of nitrites and of organic matter (RIDEAL and STEWART), A., ii, 472.

estimation of phosphates in (WOODMAN and CAYVAN), A., ii, 344; (LEPIERRE), A., ii, 689.

estimation of sulphuric acid in (HARTLEB), A., ii, 627; (WINKLER), A., ii, 628.

estimation of, volumetrically, in alcohol (BULL), A., ii, 137.

elimination and estimation of, in fats, oils, and waxes (DAVIS), A., ii, 629.

estimation of, in mixtures of organic substances and sodium hydrogen carbonate (KÖNIG), A., ii, 473.

**Water.** See also Steam.

**Water chestnut.** See Agricultural Chemistry.

**Wax,** bees', distillation of (GRESHOFF and SACK), A., i, 446.

assay of (BUCHNER), A., ii, 208.

testing of (WERDER), A., ii, 139.

$C_{37}H_{74}O_2$ , found on the leaves of the wild banana tree (GRESHOFF and SACK), A., i, 445.

from the wild fig tree (GRESHOFF and SACK), A., i, 445.

analysis of (DIETERICH), A., ii, 139.

optical examination of (MARPMANN), A., ii, 431.

modification of Hübl's method of estimating the acid and saponification numbers of (EICHORN), A., ii, 48.

elimination and estimation of water in (DAVIS), A., ii, 629.

**Weight,** conservation of, lecture experiments to demonstrate the principle of (SALVADORI), A., ii, 547.

**Weight, molecular,** at the boiling point (DE FORCRAND), A., ii, 594.

determination of, use of pyridine for by the ebullioscopic method (INNES), T., 261; P., 1900, 223.

of aluminium compounds and salts (KÖHLER), A., ii, 21.

of chloral hydrate at the boiling point (DE FORCRAND), A., i, 668.

of glycogen (JACKSON), A., i, 371.

of indigo-blue and indigo-red (VAUBEL), A., i, 714.

of ozone (LADENBURG), A., ii, 232; (OTTO), A., ii, 380.

of triphenyltrimesic acid and its ethyl esters (MANTHEY), A., i, 31.

**Weldon-deposit,** testing of (JURISCH; LUNGE), A., ii, 198.

**Wheat.** See Agricultural Chemistry.

**Wine,** manufacture of (BÖTTINGER), A., ii, 269.

analysis of (BOLM), A., ii, 203.

dilution of, and its detection (GAUTIER, CHASSEVANT, and MAGNIER DE LA SOURCE; JEAN), A., ii, 353.

new indicator for determining the acidity of (RUNYAN), A., ii, 629.

detection of alum in (LOPRESTI), A., ii, 198.

detection of citric acid in (SPICA), A., ii, 701.

detection of "orchil red," orchil, cochineal, phytolacca and beetroot red in (BELLIER), A., ii, 210.

detection of "saccharin" in (WIRTHLE), A., ii, 135, 704.

detection of salicylic acid in (PEREIRA), A., ii, 428; (FERREIRA DA SILVA), A., ii, 585.

detection and estimation of salicylic acid in (PELLET), A., ii, 701.

source of error in testing, for salicylic acid (PELLET), A., ii, 207; (FERREIRA DA SILVA), A., ii, 291.

detection of starch-sugar in (DELLE), A., ii, 44.

detection of added sulphuric acid in (CARPENTIERI), A., ii, 191.

estimation of volatile acids and chlorides in (KLEIBER), A., ii, 629.

occurrence and estimation of lactic acid in (KUNZ), A., ii, 700.

estimation of malic acid in (HILGER), A., ii, 290.

estimation of phosphoric acid in (SARTORI; WOY), A., ii, 344.

estimation of sulphurous acid in (PATUREL), A., ii, 628.

**Wollastonite** from Galle (COOMARA-SWAMY), A., ii, 171.

**Wood,** products of the hydrolysis of (STOKER), A., i, 67.

**Wood oil,** composition of (FRAPS), A., i, 188.

**Wool,** action of nitrous acid on (LIDOFF), A., i, 243.

**X.**

**Xanthine,** synthesis of, from cyanoacetic acid (TRAUBE), A., i, 54.

electrolytic reduction of (TAFEL and ACH), A., i, 425.

**Xanthorhamnin,** sugars of (VOROČEK and FRIČ), A., i, 161.

**Xenon,** isolation of, from air (DEWAR), A., ii, 597.



(*o*-Xylene, *Me* : *Me* = 1:2 ; *m*-xylene, *Me* : *Me* = 1:3 ; *p*-xylene, *Me* : *Me* = 1:4.)

- Xenon**, separation and spectra of (LIVEING and DEWAR), A., ii, 598.  
 physical properties of (RAMSAY and TRAVERS), A., ii, 238.  
 refraction of (RAMSAY), A., ii, 141.
- Xylan-bassoric acid** (O'SULLIVAN), T., 1182 ; P., 1901, 157.
- Xylene**, nitro-*o*-nitroso- (ZINCKE and DROST), A., i, 73.
- o*-Xylene, dichlorinated (FERRAND), A., i, 636.
- Xylenes**, bromination and iodination of (EDINGER and GOLDBERG), A., i, 22, 23.
- Xylenes**, *o*-, *m*-, and *p*-iodo- (EDINGER and GOLDBERG), A., i, 22.  
 nitroso- (BAMBERGER and RISING), A., i, 530, 531, 532.
- m*-Xyleneazoimine, 2:5- or 5:6-*o*-nitro- (ZINCKE and DROST), A., i, 73.
- m*-Xylenediazoaminobenzoic acid, and its methyl ester (MEHNER), A., i, 471.
- Xylenedihydroxylamines** (BAMBERGER and RISING), A., i, 530, 531, 532.
- 1:2-Xylene-3-sulphinic and -3-sulphonic acids** (MOSCHNER), A., i, 374.
- 1:3-Xylene-5-sulphinic acid and -5-sulphonic chloride and amide** (MOSCHNER), A., i, 374.
- 1:3-Xylene-5-sulphonio acid** and its salts, amide, bromide, chloride, anilide and toluidide (ARMSTRONG and WILSON), P., 1900, 230.
- p*-Xylenesulphonic acid, purification of (KRAFFT and WILKE), A., i, 74.
- m*-Xylenol, tribromo-, and its  $\psi$ -quinol and acetyl derivative (ZINCKE), A., i, 205.
- m*-4-Xylenol, 2-amino-, and its sulphate (BAMBERGER and RISING), A., i, 531.  
 bromo-derivatives of (NÖLTING, BRAUN, and THESMAR), A., i, 589.
- Xylenols**, 1:2:3- and 1:3:5-, 6- and 2-nitroso- (FISCHER and CAMMER-LOHER), A., i, 418.
- m*-5-Xylenol-4-sulphonic acid, 2-amino- (BAMBERGER and RISING), A., i, 531.
- $\beta$ -m-Xylenoxyacinnamic acid and its ethyl ester (RUHEMANN and WRAGG), T., 1187 ; P., 1901, 187.
- m*-Xylenoxyfumaric acid and its ethyl ester (RUHEMANN and WRAGG), T., 1118 ; P., 1901, 187.
- $\beta$ -m-Xylenoxystyrene (RUHEMANN and WRAGG), T., 1188 ; P., 1901, 188.
- Xylic acid**. See Dimethylbenzoic acid.
- Xylidine**, action of ethylene dibromide on (SENIER and GOODWIN), T., 254 ; P., 1900, 228.
- 1:2:5-Xylidine**, cyanoacetyl derivative of (GROTHE), A., i, 80.
- Xylidines**, 1:2:5- and 1:3:4-, chloroacetyl, phenylsulphoneacetyl, *p*-tolylsulphoneacetyl, thiodiglycolyl, sulphonediacetyl, and thiocynoacetyl derivatives of (GROTHE), A., i, 79, 80.
- Xylidines**, bromo- and nitro-derivatives of, and their acetyl and benzoyl compounds (NÖLTING, BRAUN, and THESMAR), A., i, 588.
- 1:2:4-Xylidine-6-sulphonic acid**, its potassium salt and acetyl derivative (ARMSTRONG and WILSON), P., 1900, 229.
- l*-Xyloic acid, oxidation of (RUFF and KOHN), A., i, 449.
- m*-Xylol mercaptan (WHEELER and JOHNSON), A., i, 707.
- m*-Xylolbromobromide (MICHAELIS and RICHTER), A., i, 356.
- Xylol-borochlorides**, -boroxides, and -boric acids, *o*-, *m*-, and *p*- (MICHAELIS and THEVENOT), A., i, 355.
- p*-Xylylene bromide, action of, on primary, secondary, and tertiary amines and on alkaloids (MANOUKIAN), A., i, 528.
- p*-Xylylenedichlorodimalonic acid and its potassium salt (EPHRAIM), A., i, 689.
- m*-Xylylenediaceoacetic acid, ethyl ester (EPHRAIM), A., i, 688.
- m*-Xylylenediamine ( $\text{Me}_2(\text{NH}_2)_2 = 1:3:2:4$ ) and its dibenzoyl derivative (BAMBERGER and DEMUTH), A., i, 209.
- Xylylenediamines**, four isomeric (NÖLTING, BRAUN, and THESMAR), A., i, 588.
- p*-Xylylenedimethyldimalonic acid and its ethyl ester and potassium salt (EPHRAIM), A., i, 689.
- Xylylenediphenylpiperidonium bromides** (SCHOLTZ), A., i, 483.
- o*-Xylylenedihydrazine and its hydrochloride and picrate (FRÄNKEL), A., i, 44.
- o*-Xylylenimine. See Dihydroisindole.
- cyclo-o*-Xylylene-1:3-dithio-2-phenyl- and -2-dimethyl-methylene and their disulphones (AUTENRIETH and HENNINGS), A., i, 560.
- o*-Xylylideneplthalide, *o*-cyano- and nitro-, and dinitrite (GOLDBERG), A., i, 32.
- m*-Xylol methyl ketone, selenium derivative of (KUNCHELL and ZIMMERMANN), A., i, 215.
- 1:3-Xylol-5-oxide**, 2:2'-diamino-, and its hydrochloride and acetyl derivative (BAMBERGER and RISING), A., i, 532.
- 1:2:4-Xylolphenyldiguanide** and its nitrate (CRAMER), A., i, 772.

**$\beta$ -2:5-Xylylpropionic acid** (HARDING and COHEN), A., i, 726.  
***o*-Xylylthiazoline**, and its picrate and platinichloride and 5-methyl derivative (GOLDBERG), A., i, 33.

## Y.

**Yeast**, nutrition of (STERN), T., 943 ; P., 1901, 126 ; (THOMAS), A., ii, 617.  
 intracellular nutrition of (KAYSER), A., ii, 263.  
 agglutination of (BARENDRECHT), A., ii, 677.  
 autofermentation of (KUTSCHER), A., ii, 466.  
 pressed, autofermentation and liquefaction of (HARDEN and ROWLAND), T., 1227 ; P., 1901, 189.  
 action of chemical agents on (BOKORNY), A., i, 437.  
 and diastase, combined action of, on starch granules (MORRIS), T., 1085 ; P., 1901, 178.  
 proteolytic enzyme of (HAHN and GERET), A., i, 59 ; ii, 677 ; (KUTSCHER), A., ii, 466, 523.  
 oxydase in (GRÜSS), A., ii, 615.  
 sterilised, zymase from (BUCHNER), A., i, 179.  
**Yeasts**, preparation of bottom fermentation, and the method of using them (JACQUEMIN), A., ii, 567.  
 fermentation experiments with sugars and (LINDNER), A., ii, 182, 263.  
 selection of carbohydrates by different, during alcoholic fermentation (KNECHT), A., ii, 568.  
**Yeast cells**, growth of, in concentrated saline solutions (CLERFEY), A., ii, 677.  
 occurrence and disappearance of glyco-gen in (MEISSNER), A., ii, 263.  
**Yeast-cell-plasma**, expressed (Buchner's zymase) (MACFADYEN, MORRIS, and ROWLAND), A., i, 59 ; (BUCHNER), A., i, 108.  
**Yeast extract**, Buchner's (WROBLEWSKI), A., ii, 465, 616.  
 influence of phosphates on the fermentative action of (WROBLEWSKI), A., ii, 328, 616.  
**Ylang-ylang oil**, benzyl alcohol from (v. SODEN and ROJAHN), A., i, 733.  
**Ytterbia and Yttria**, isolation of (G. and E. URBAIN), A., ii, 160.

## Z.

**Zeagonite**. See Gismondite.  
**Zeolite** from Valle dei Zuccanti (ONGARO), A., ii, 396.  
**Zinc**, occurrence of, in the vegetable kingdom (FRICKE), A., ii, 34 ; (LABAND), A., ii, 467.  
 presence of, in alcohol (ROMAN and DELLUC), A., ii, 40.  
 melting point of (HOLBORN and DAY), A., ii, 85.  
 rate of solution of, in acids (ERICSON-AURÉN), A., ii, 451.  
 action of, on *Aspergillus niger* (RICHTER), A., ii, 567.  
**Zinc alloys** with copper, thermochemistry of (BAKER), A., ii, 303.  
 with copper and with tin, density of (MAEY), A., ii, 655.  
**Zinc salts**, action of substituted ammonia bases on (HERZ), A., ii, 240.  
**Zinc bromide and chloride**, compounds of, with cupric oxide (MAILHE), A., ii, 601.  
 chloride, compound of, with triphenylchloromethane (GOMBERG), A., i, 638.  
 haloids, compounds of, with bases of the pyridine series (TOMBECK), A., i, 164.  
**Zinc organic compounds** :—  
 ethyl, action of, on acid anhydride, oxides, and lactones (GRANICHSTÄDTEN and WERNER), A., i, 518.  
 indigo-white (BINZ), A., i, 593.  
**Zinc, detection, estimation and separation of** :—  
 precipitation of, by hydrogen sulphide in acid solution (STULL), A., ii, 625.  
 test for, in alcohol (ROMAN and DELLUC), A., ii, 40.  
 estimation of, volumetrically (WALKER), A., ii, 625.  
 estimation of, by means of iodine solution (KNAPS), A., ii, 579.  
 estimation of, by organic bases (HERZ), A., ii, 240, 478.  
 estimation of, in iron-spar (FLATH), A., ii, 625.  
 separation of, from cobalt and nickel (TREADWELL and KRAMERS), A., ii, 281.  
 separation of, from copper (SÖDERBAUM), A., ii, 197.  
**Zinc blendes**, estimation of fluorine in (BULLNHEIMER), A., ii, 191.  
**Zircon**, colour of (v. KRAATZ-KOSCHLAU and WÖHLER), A., ii, 166 ; (SPEZIA), A., ii, 167.

- Zirconium** boide (TUCKER and MOODY),  
P., 1901, 129.  
thermochemistry of the hyper-acids of  
(PISSARJEWSKY), A., ii, 56.
- Zirconium earth** in euxenite from Brevig  
(HOFMANN and PRANDTL), A., ii, 387.
- Zoisite** from Roumania (PONI), A.,  
ii, 26.
- Zymase** from sterilised yeast (BUCHNER),  
A., i, 179.  
simple experiment to illustrate the  
action of (ALBERT), A., i, 180.  
Buchner's. See Yeast-cell-plasma.
- Zymogens** of the stomach (GLAESSNER),  
A., ii, 666.
-